

MONSTER TRUCK RACE SETUP! Maxx mods that really work

RADIO CONTROL

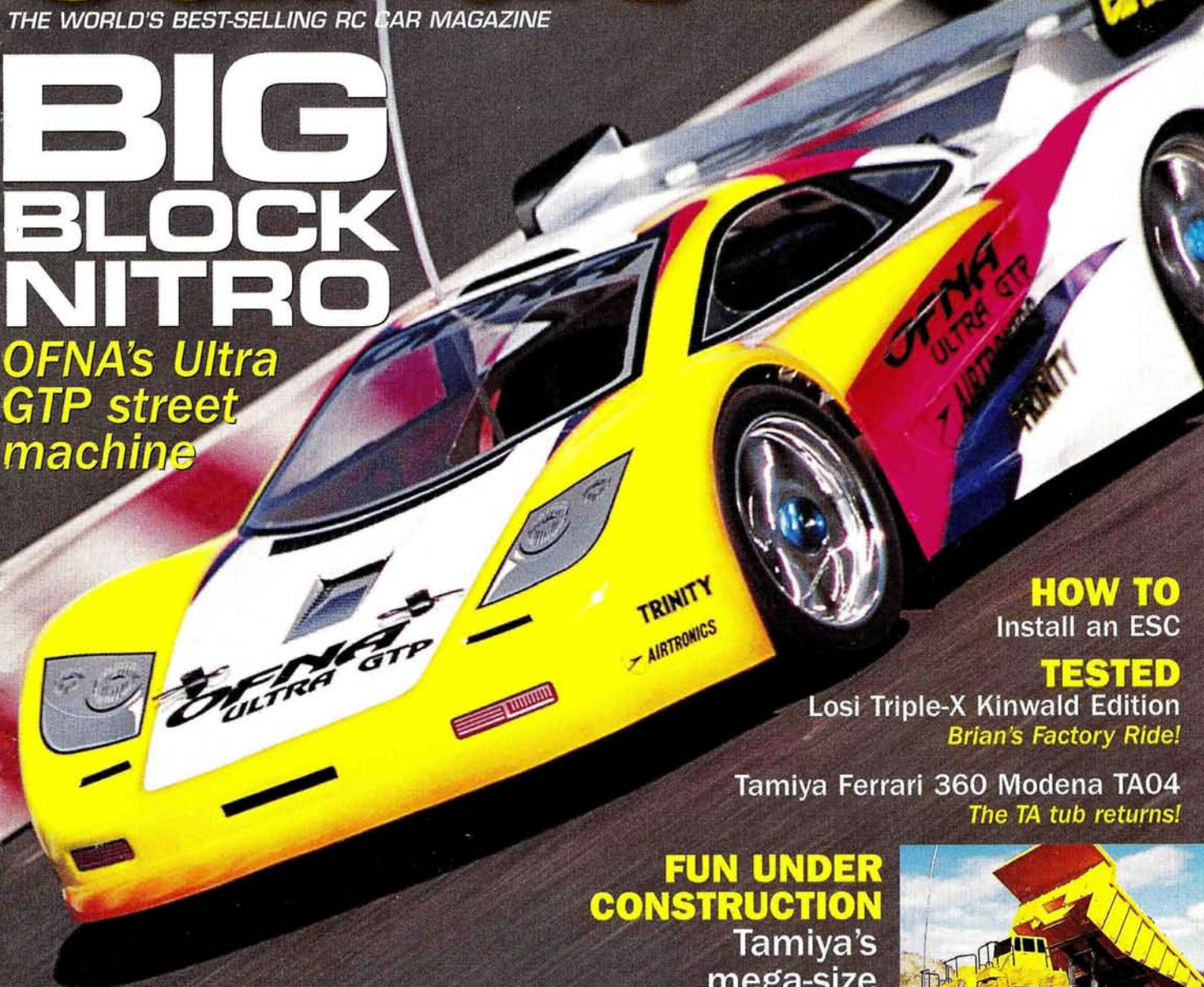
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car action

THE WORLD'S BEST-SELLING RC CAR MAGAZINE

BIG BLOCK NITRO

OFNA's Ultra
GTP street
machine



HOW TO
Install an ESC

TESTED

Losi Triple-X Kinwald Edition
Brian's Factory Ride!

Tamiya Ferrari 360 Modena TA04
The TA tub returns!

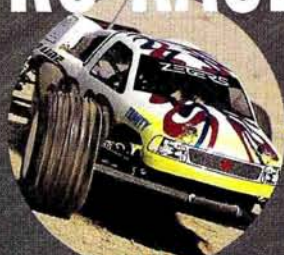
**FUN UNDER
CONSTRUCTION**

Tamiya's
mega-size
Mammoth



3 rivals—1 winner!

PRO RACE TRUCK SHOWDOWN



KYOSHO ULTIMA ST TYPE R ■ ASSOCIATED T3 ■ TEAM LOSI TRIPLE-X



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JUNE 2001

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contents

Volume 16 ■ Number 6 ■ June 2001

features



112

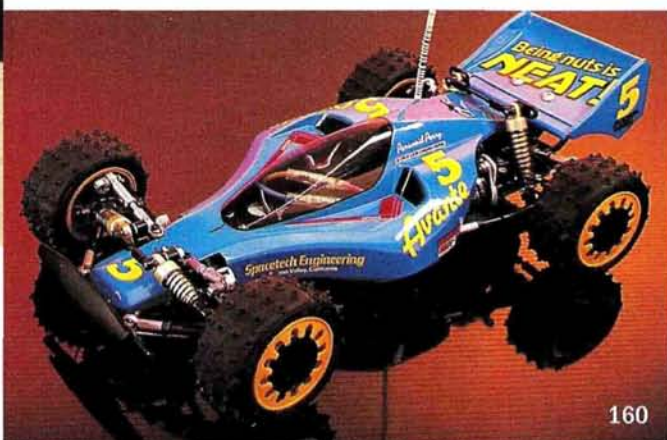
112 2WD Electric Race Truck Shootout

We test to find the best
by the staff of RC Car Action

122 Maxx-imum Racing Performance

Take your Traxxas Maxx out of the backyard
and into battle!

by George M. Gonzalez



160

122



168



148 Mike Boylan's 7th Annual Snowbird Nationals

Trinity's Cyrul and Associated's Silva reign supreme
by Peter Vieira

160 Time Warp

Tamiya Avante
by Derek Buono

168 How To: Install an ESC

Isn't it time you made this critical upgrade?

by Hank Riley

206 Product Watch

Futaba MC330CR Reversing ESC

by Peter Vieira

DEPARTMENTS

- 22 Starting Line
- 26 Readers Write
- 46 Readers' Rides
- 204 RCStore.com
- 217 Index of advertisers

COLUMNS

- 35 Inside Scoop
by Chris Chianelli
- 54 Pit Tips
Illustrations by David Baker
- 62 Troubleshooting
by George M. Gonzalez
- 133 Racer News
by Greg Vogel & Derek Buono
- 180 4x4
Maxx Power for your dual-motor
Monster Truck
by Kevin Hetmanski
- 192 Body Shop
Masking and more
by Bob Hastings
- 218 Chris's Back Lot
Meet the Van Man
by Chris Chianelli

ON THE COVER: (from top): OFNA's Ultra GTP on the pipe; the Tamiya Mammoth unloads; and (from right to left) the Kyosho Ultima ST Type R, Associated Factory Team T3 and Team Losi Triple-XT kick up some dirt. All photos by Walter Sidas.

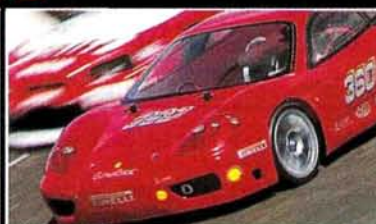
track tests



70

OFNA Ultra GTP RTR

1/8-scale buggy tech hits the street
by George M. Gonzalez



80

Tamiya Ferrari 360 Modena TA04

The return of the TA tub chassis.
by Peter Vieira



92

Team Losi Triple-X Kinwald Edition

We drive Brian's factory replica
by Peter Vieira



102

Tamiya Mammoth

Take a load off!
by Kevin Hetmanski



Build it and they will come

This issue features Kevin Hetmanski's review of the Tamiya Mammoth mega-dumptruck, an unlikely subject for an RC kit that Tamiya masterfully turned into a stunning, functional (and huge) model. The Mammoth is the latest in a long line of "niche" vehicles for Tamiya that include the much coveted "hauler" series of 18 wheelers, the remarkably detailed 1/16-scale tanks (now fortified with infrared weaponry for photo-electric "combat"), and perhaps most famous of all, the Toyota Hi-Luxe/Blazing Blazer/Bruiser/Mountaineer line of ultra-realistic, metal-framed, 4WD pickup trucks.

Kyosho has also had a history of offering compelling niche vehicles, including a series of electric motorcycles that began with the Elek Rider and ended with the Hanging-On Rider bikes, which featured an articulated rider that actually leaned the bike over in the turns. The tracked Blizzard vehicles, RC's answer to a Snowcat, came from Kyosho, and most recently Kyosho brought us the nitro and electric ATV Rider quads—not to mention an RC surfer, as you boating fans are surely aware.

I'd like to see more of these vehicles, from more manufacturers. Some of the machines noted above have disappeared from their manufacturers' catalogs, but I feel they deserve another shot; other varieties have (as far as I know) not yet been recreated in RC. Here's what I'd like to build and play with in the future:

- **Motorcycles.** Yes, there are Bachman/Royal bikes out there, but they don't accept standard radio gear and are basically sealed toys (but still fun). I want to see a motorcycle that takes a standard 05 motor, steering servo, receiver, and ESC, and features real oil-damped front and rear suspension with full adjustability. Kyosho, you've built bikes before—do it again!
- **Scale dragsters and funny cars.** There are direct-drive, pan-chassis rails and funnies available (with very affordable, rocket-fast versions available from Bolink), but I would love to see a realistic drive train and tube chassis in a well-produced, molded kit with pneumatic rubber tires and functional parachutes. Imagine if Tamiya produced such a kit—how awesome would that be?
- **Snowmobiles.** C'mon, somebody needs to make a sno-cross sled for RC! You've seen them in the X-Games, let's see them in the backyard.
- **Muscle cars.** True, HPI, Parma, Bolink and others offer bodies that give the look of modern and vintage Mustangs, Camaros and the like, but the touring and pan-car chassis they fit on have little to do with real muscle cars. I want to see an authentic muscle-car platform with a nitro engine in the front of the car, driving a solid axle in the rear of the car, with all the modification potential of a real pony car. Think of what you could do with that on the street—and think how cool it would be as the basis for parking-lot NASCAR racing!

Where else can RC go that RC hasn't gone before? Email your ideas to me at peter@airage.com; maybe your idea could turn into a *Radio Control Car Action* project!

Peter Vieira
Executive Editor

RADIO CONTROL car action

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Faster than a Speeding Minivan

I have a Parma Viper pan car that has reached 60mph. I know it can go faster than this because the tires were old and worn down by an inch in circumference. Also, the motor's brushes were worn out and really needed to be replaced. We used a 29-tooth pinion and an 81-tooth spur gear with a 6-cell pack of 2000s. One other thing I learned from this experiment is that my Viper can beat my Dad's 1999 Villager from zero to 60.

[email]
CHRIS

I'm pretty sure anything can beat your Dad's Villager from zero to 60.
—Pete

Past the Limit

I read the "2001 Reversing ESC Guide" in the April issue and have come to a decision: I want to purchase the Futaba MC230CR; it fits my needs perfectly—almost perfectly. It says that the motor limit is 20 turns, and I have a Trinity Speed Gems 17-turn motor. Would running this combination be a problem? I don't plan to go to fewer turns because it's a monster truck, and I can't change the ratio because it's a King Blackfoot. I'm on a budget and can't afford much else, and since I plan to race later (with a different car), I need the disable feature. I don't want to buy it only to have it burn up later.

[email]
MATT ARMENI

The manufacturer motor limits are suggestions; most ESCs can handle a slightly lower wind than specified as long as you don't over-gear the vehicle, run it in

grass or soft sand, or otherwise overload the motor. But beware: below the limit is below the limit, and you will probably have trouble getting warranty service on the ESC if something goes wrong—even if it has nothing to do with the motor.

—Pete

Get a Job

I hate having to wait for the one last thing that you need to make your RC car run! In my case, it's the radio. I got a Losi Triple-X Buggy last year and a Losi Triple-XT truck this past Christmas. My brother used to race, and he gave me the electronics for my buggy. Then I got my truck, and it suddenly hit me that I wouldn't be able to afford the electronics for it for a long time. My birthday is coming up, but I'll only get \$100 for it, so that will buy a cheap servo and speed control. I had hoped to use my old AM radio for my truck and my car. But my radio just broke, and now I have to buy a new one. I decided to sell one of my vehicles to get a new radio. Should I sell the car or the truck? *RC Car Action* rocks! [email]
ERIC TRAVIS

Yeah, life's rough when you "only" get 100 bucks for your birthday! Eric, don't sell anything. Get a job. If you're too young to flip burgers, make your own job: cut grass, pull weeds, walk dogs, paint fences, or wash cars. If those aren't options, ask yourself these three questions: what do I see my neighbors doing on week-end afternoons that looks like no fun for them? Can I do it for them instead? How much should I charge the lazy bums? Welcome to the world of work.

—Pete

Up in Arms

I have a question about the HPI Nitro MT Racer. In an article in the July 2000 issue, it shows the rear shocks on the back of the lower control arms. In the "Big Air" article (August 2000), it shows the rear shocks on the back of the lower control arms. And in Derek's racer test, the shocks are also on the rear of the lower control arms. In all the HPI ads for the Nitro MT Racer, the shocks are in front of the lower control arms. I just bought a Racer and built it according to the manual—shocks in front. What gives? Am I missing something? Is there an advantage to having them on the back?

[email]
JOSH

The MT's arms can be flipped to alter the wheelbase; we built our MT "short"; you built yours "long." Try both setups; we like the quick handling of the shorter wheelbase.

—Pete

4WD Gas Class

You stated that there is no racing class for the Kyosho TR-15. As far as I can remember, there is, but we don't hear about it because there are not enough competitors to realize the class. I remember a Gas Nationals previously covered in your mag. It ran a 1/40 buggy Main of three or four nitro RC10s or Losi conversions. I figure the class was more popular when Kyosho still produced the Inferno 10, so let's hope the TR-15 will just breathe new life into this class. [email]
CASEY COOLICH

Right you are, Casey; ROAR does recognize 4WD 1/40 nitro buggy as a class. But in terms of regional racing, 4WD nitro buggy guys are few and far between—so few and far between that, as you noted, only three or four guys could be scrounged up for a national event. That's what I meant by "no nitro 4WD class." But I'm with you; I would love to see the TR-15 get something started.

—Pete

Speed Secret

I just want to say thanks for the "Supercharge that Stocker" article in the April issue. I like that all the ideas were cheap and easy to do. My friend and I



both have Traxxas Stampedes. I got the new issue before he did because I subscribe, and I used all the tips before he could buy his own copy at the store. Now my Stampedes is faster than his! I guess I'll enjoy it until he sees the article. Thanks again. [email]
KYLE PLOTNIK ■

YOU SAID IT Remembering "The Intimidator"

Could you post a little section in the next mag about the death of our friend Dale Earnhardt? Not much—just a few good-hearted words about the man. He was my hero. I am extremely upset about his death, as is the rest of the racing world. Not just NASCAR but everyone from monster-truck guys to drag-racing fans are out sharing their thoughts about Dale. [email]
RODRIGO DA SILVA

I think you spoke for all of us, Rodrigo. Whether you rooted for him or against him, I think we can all agree that racing won't be the same without him. Dale Earnhardt, rest in peace.
—Pete

Bob Hastings painted this Protoform Monte Carlo in Dale's colors for you, Rodrigo. Thanks for writing.



WRITE TO US! We welcome your photos, drawings, comments and suggestions. Letters should be addressed to "Letters," Air Age Inc., Radio Control Car Action, 100 East Ridge, Ridgefield, CT 06877-4606 USA. Letters may be edited for clarity and brevity, and each must include a full name and address or telephone number so that the identity of the sender can be verified. We regret that, owing to the tremendous numbers of letters we receive, we can't respond to every one.

EMAIL ■ Derek Buono: derekb@airage.com ■ Chris Chianelli: chrisc@airage.com ■ Bob Hastings: bobh@airage.com ■ Kevin Hetmanski: kevinh@airage.com ■ Steve Pond: stevep@airage.com ■ Peter Vieira: peterv@airage.com ■ Greg Vogel: gregv@airage.com

BY CHRIS
CHIANELLI

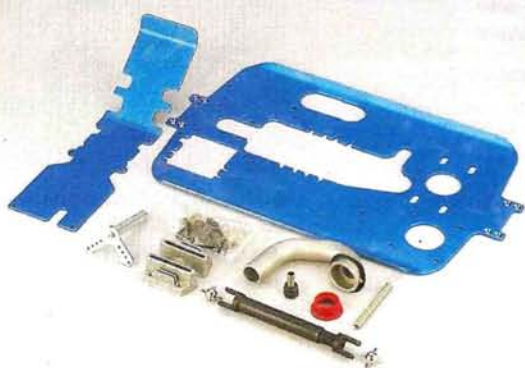
ALUMINUM ART AND A TI-FIGHTER

Hardcore machined-aluminum E-Maxx chassis & T-Maxx .21 long-wheelbase titanium conversion chassis

There's a lot of metal out there for the Maxxes, but Hardcore always seems to have something extra-special. Let's look at the amazing E-Maxx chassis first. I see a lot (and I mean a lot) of machine time clocked in on that bad boy! According to the Hardcore crew, the 6061 chassis weighs just 11 ounces, lowers the batteries a full ½ inch for a lower CG and tighter handling (plastic insulation trays for the cells are included), and you can get it in purple, blue, green and silver.

The T-Maxx setup includes a titanium chassis and skidplate and is drilled for .21 engine mounts. A bell-crank is included to actuate the .21's slide carburetor, and you even get an exhaust manifold and clutch nut. Since the engine has to be pushed back on the chassis, Hardcore extended the wheelbase. A longer rear drive shaft is part of the conversion, so installation is a total bolt-on deal.

Hardcore Racing Components,
25435 Rye Canyon Rd., Valencia, CA
91355; (661) 294-5032;
fax (661) 294-0770.



FORMAL WEAR FOR YOUR MAXX PRO-LINE MAXX BOW TIE TIRES

Real racing tires are shaping up to be the next big thing for the Traxxas Maxx trucks, and it's no surprise that Pro-Line has a competition tire just for the big rigs. The proven Bow Tie tread pattern has been adapted to a giant, ribbed-sidewall carcass that is bolstered by included foam inserts. The Maxx Bow Ties scream "race," but they'll tear up the backyard, too. Naturally, they're a direct fit for stock Maxx rims and aftermarket hoops for T-Maxx and E-Maxx.



Pro-Line/Jaco, P.O. Box 456, Beaumont, CA
92223; (909) 849-9781; fax (909) 849-2968;
www.pro-lineracing.com.

DREAM REAM Trinity Pro Reamer

It's official, the hi-luxe reamer wars are over, and Trinity won. They don't get any trickier than this carbon-fiber-handled beauty with knurled grip, razor-sharp cutting edges, and mirror-polished aluminum cap. This tool goes way beyond mere function and into over-the-top territory. But now that you've seen it, can you live without one?

Trinity, 36 Meridian Rd., Edison, NJ 08820; (732) 635-1600;
www.teamtrinity.com



MIGHTY MINI UPGRADES GPM MACHINED HOP-UP PARTS FOR KYOSHO MINI-Z

The Mini-Z offers the excitement of 1/10-scale RC—only smaller; so it's no surprise that GPM also has high-quality machined parts for the tiny car that are as well-built as its 1/10-scale line—only smaller. The 5-, 6- and 10-spoke aluminum wheels are sold complete with tires. Precision steering knuckles



STUTTGART MINI-Z PORSCHE 911 GT3

are also offered, and the butter-smooth machined ball-diff assembly is pure aluminum art.

Oh ... you say you don't have a Mini-Z to bolt the stuff onto? You're in luck; Kyosho just released a Porsche GT3-bodied Z-car, which includes Perflex radio gear and a pre-painted body just like the rest of the Mini-Z lineup.

GPM, distributed by Hobby Etc., 90 West Pearl St., Nashua, NH 03060; (603) 595-8549; fax (603) 595-1498. www.hobbyetc.com. Kyosho; distributed by Great Planes, 2904 Reasearch Rd., Champaign IL., 61826-9021; (217) 398-6300; www.kyosho.com.



Trinity TEAM

Stuff!

T-Maxx Punk Head
Extra cooling, increased
power and fuel
economy.
TK5111, \$45.00

Pro Antenna Mount
With removable
tube.
RC2020, \$5.99



E-Maxx Heatsink Motor Mounting Plate
Keeps motors cooler!
TK5117, \$19.99

E-Maxx Heatsink Battery Straps
Cool batteries are happy batteries.
2 pieces. TK5115, \$39.99

Maxx Lite Slipper Plate
TK5058, 1 pair, \$24.99
TK5058S, 1 piece, \$13.99

1/10th Fuel Filter
Super small, keeps impurities out
of your engine.
RC8103, \$9.99



TRINITY

Yes, it's Orange

HG ALUMINUM FOR TRAXXAS RUSTLER

These orange-anodized items fit the nitro versions of the Rustler and Stampede and represent a small sampling of what HG has to offer. In addition to suspension arms, HG has caster blocks, steering arms, axle carriers and bulkheads, hex hubs and even chassis plates. If you wish you could get orange gear for your Maxx, HG has you covered with arms and bumpers, all in orange.

HG, 6 Tower Heights, Albany, NY 12211;
(518) 782-9255; fax (518) 782-9256;
www.1hg.com.

Pro-Line has one of the best-looking vintage truck bodies

we've seen in a while. The Early 50s Chevy Pickup (yes, that's the name) has just the right look, includes window masks and flame decals (in orange; the blue flames shown are paint) and is engineered for a perfect fit on the Traxxas T-Maxx.

There's nothing stopping you from adapting it to other vehicles as well; this is a creative hobby, after all.



WHAT'S OLD IS NEW

Here's a shot of Pro-Line's Crowd Pleazer shell for the Inferno MP7.5, for those of you who wrote in asking where the Inferno body was that I mentioned but forgot to show in the May "Scoop" Hey, I'm only human; I can't be perfect all the time! Stop making me feel bad!

Pro-Line/Jaco, P.O. Box 456, Beaumont, CA 92223; (909) 849-9781; fax (909) 849-2968; www.pro-lineracing.com.



Trinity

TEAM TOOLS

Inch Size Pro Nut Drivers

RC2071 3/16"
RC2072 5/16"
RC2073 3/8"
RC2074 11/32"
RC2075 1/4"

RC8105 Body Hole Reamer

RC7023 Body Trimming Scissors

Metric Size Pro Nut Drivers
RC2069 3mm
RC2070 4mm
RC2077 Spring Post Wrench

.050"

1/16"

2.0mm

2.5mm

3/32"

RC2063 .050" Pro Wrench
RC2064 1/16" Pro Wrench
RC2060 1.5mm Pro Wrench
RC2061 2.0mm - 5/64" Pro Wrench
RC2062 2.5mm Pro Wrench
RC2065 3/32" Pro Wrench
RC2067 Phillips Screw Driver
RC2066 Carb Tuning Flathead Screw Driver

NEW!

TRINITY

MORE POWER AND MERCEDES STYLE FROM HPI

HPI NITRO STAR PRO EVOLUTION II ENGINE AND MERCEDES CLK-DTM BODY

HPI's partnership with NovaRossi has resulted in a new addition to the Nitro Star lineup. The Nitro Star Pro Evolution II powerplant pumps out 1.25hp at 34,500rpm (according to HPI) and features a 3-needle, 5.4mm slide carburetor. It's bump-start only in that configuration; if you want the Evo II with a pull-starter, it comes with a 5.4mm rotary carb. HPI already warns that quantities are

limited, so don't wait if you're looking to plant HPI power in your nitro car.

The 190mm Mercedes-Benz CLK DTM 2000 body includes two sheets of flexible vinyl decal sheets with window lines, headlights, grills, tail lights, HPI logos and other details, as well as full "Service 24h" racing livery. Overspray film and vinyl window masks are also included, and there's a separate racing wing.

HPI Racing, 15321 Barranca Pky., Irvine, CA 92618; (949) 753-1099; fax (949) 753-1098; www.hpiracing.com.



All-Ball OFNA Buggy OFNA MBX-R2

No points scored for originality in the name department, but OFNA's R2 does offer something new in the suspension department; namely, pivot-ball hubs on all four corners—an 1/8-scale off-road first. The R2 will be offered as an 80-percent-assembled chassis (no engine) with a clear body and padded nylon case. All you have to do is install the built-and-filled shocks, button down the wing and bolt up the wheels; the tires have already been glued. Features-wise, the MBX-R2 packs a lot in; full bearings, 7mm CVA axles and blue-anodized everything. Look for a review next month!

OFNA Racing, 22692 Granite Way, Ste. B, Laguna Hills, CA 92653; (949) 586-2910; fax (949) 586-8812; www.ofna.com.



BALL AND PIVOT OFNA Pivot-Ball Conversion for Kyosho Inferno MP 7.5

If you like the rear pivot-ball idea and already have an Inferno MP 7.5, you're in luck; OFNA offers a conversion kit that brings the precise action and quick adjustability of a pivot-ball setup to the world-championship-winning MP 7.5. The kit includes suspension arms, hubs, pivot balls, padded aluminum ball retainers, new camber-link ends with pivot balls and new stub axles. OFNA even throws in the wrenches required for installation! For OFNA Ultra-series buggy owners, there's a pivot-ball kit for your car, too.

OFNA Racing, 22692 Granite Way, Ste. B, Laguna Hills, CA 92653; (949) 586-2910; fax (949) 586-8812; www.ofna.com.



Readers' Rides

Win a one-year subscription to *Radio Control Car Action* magazine! Send a sharp, uncluttered, well-exposed color photo of your vehicle (no Polaroids) and a brief description to "Readers' Rides," *RC Car Action*, 100 East Ridge, Ridgefield, CT 06877-4606 USA. If we publish your photo, you'll receive a free, one-year subscription to *RC Car Action* and will be eligible to win the "Reader's Ride of the Year Contest." Write your address and phone number on your letter and on the back of every photo you send. Good luck!

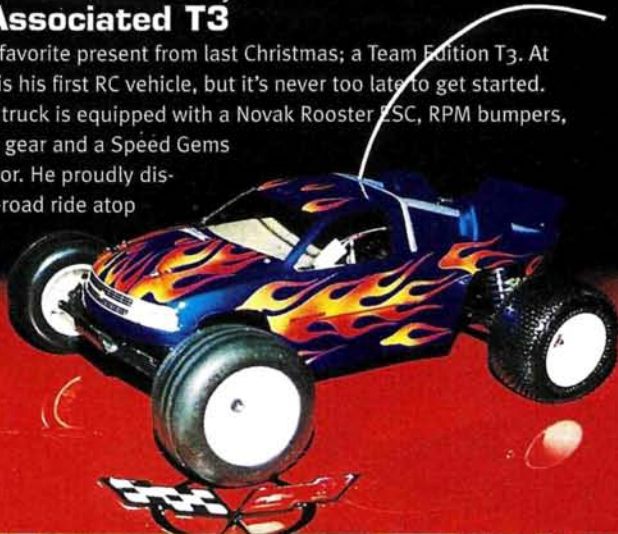


Mike Lobeck, Monticello, MN Tamiya Clod Buster

Outfitted with ESP's Clodzilla II kit, this black monster truck is standing tall. The nicely detailed machine features Parma's 1997 Bigfoot body. Mike's truck has a pair of Speed Gem 2 motors and a Sanyo 2400 6-cell pack for power. Along with Futaba radio gear, the Tamiya truck has a Novak Super Rooster speed control.

Ken Vanover, Crowley, TX Team Associated T3

Here's Ken's favorite present from last Christmas; a Team Edition T3. At age 32, this is his first RC vehicle, but it's never too late to get started. The off-road truck is equipped with a Novak Rooster ESC, RPM bumpers, Futaba radio gear and a Speed Gems Emerald motor. He proudly displays his off-road ride atop his favorite on-road ride—a 2000 Corvette hardtop.



David Richards, Leawood, KS OFNA Ultra Worlds II

David chose a simple but racy look for his 1/8-scale off-road racer. The blue and red OFNA features a .21-size O.S. RZ-V99B engine, a Hitec Lynx FM controller, a 945MG high-torque steering servo and an HS-605 throttle servo.



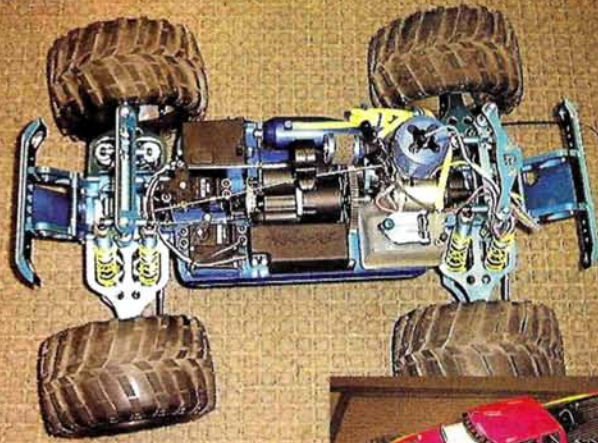
Jeff Wilson, Owings Mills, MD Team Associated TC3

Beneath this Protoform Chrysler 300 is the Team edition TC3. The touring car is outfitted with Hammad Ghuman aluminum wheels, Robinson Racing gears, Associated threaded shock bodies and a Futaba 3PJ radio.



Jake Van Dyke, Ada, MI Traxxas Stampede

What better place than the beach to kick up some sand with your monster truck. This silver Stampede has a 13-turn Trinity motor, Pro-Line Sand Paw tires and chrome RPM rims. Jake tells us that the Traxxas monster can kick up 6-foot-tall rooster tails at full speed. His future plans for the truck include a new ESC and some more hop-ups.



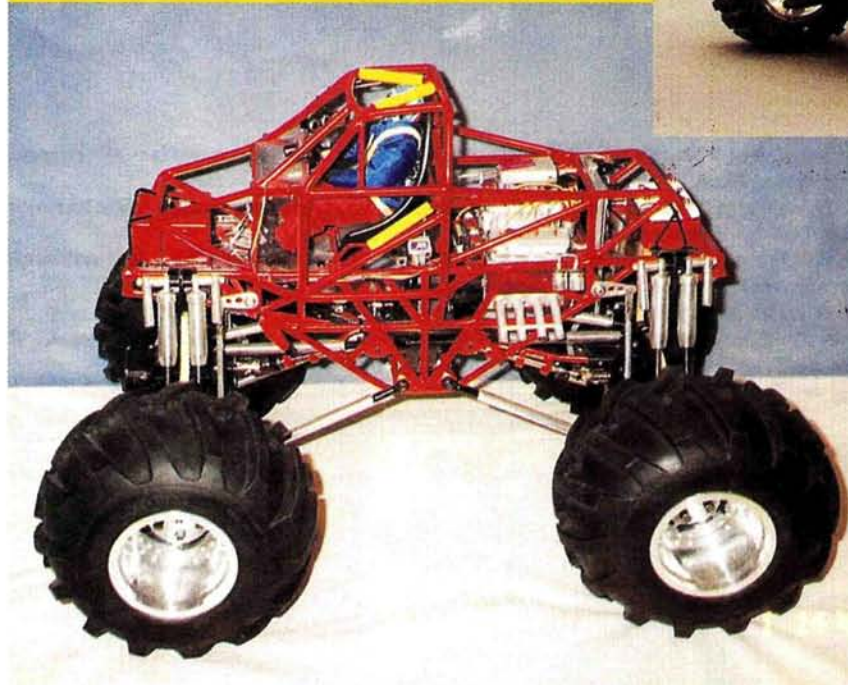
Craig Trachten, New Milford, CT Traxxas T-Maxx

This T-Maxx started as a store demonstration model, but one of the hazards of co-owning a hobby shop is passing a wall of hop-ups every day. Now the Traxxas monster sports a full complement of GPM and Trinity hardware, a Dynamite fuel line and Aerotech wheels. Craig air-brushed the stock Traxxas body using Parma Faskolor paints.



Jesse Brotje, Bowling Green, OH HPI Nitro MT

Although this Nitro MT is in stock trim right now, Jesse's next purchase will be a 2-speed transmission to give it more top end. The red to yellow fade on the HPI truck was done using Pactra spray cans; Jesse says that although he doesn't have any fancy painting equipment, he loves to paint bodies and hopes to do another one soon.



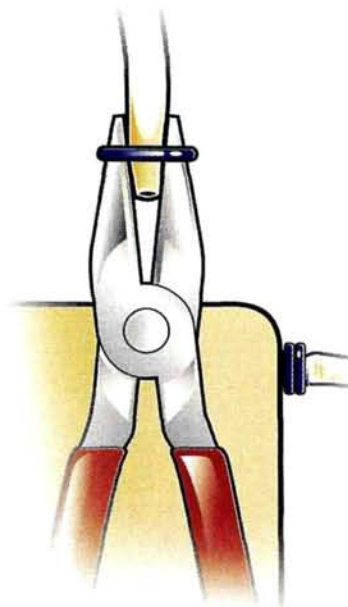
John Boyer, Homer City, PA Tamiya Juggernaut 2

Before you look for the name of the manufacturer, we'll tell you right up front that this gorgeous tube frame was hand-built from 3/16-inch brake line. After brazing it together, John powder-coated the chassis for the bright red finish. The truck is complemented by a fully detailed interior and a scale radiator and brakes, and the truck's motors are hidden inside the Parma Hemi engine. Functional details include DuraTrax bearings and shocks, Kyosho mod motors, Novak 410 speed control and Futaba radio equipment.

Pit Tips

ILLUSTRATIONS BY
DAVID BAKER

WIN AN OFNA Z-10 RALLY! Radio Control Car Action will give a 6-month subscription (or extend an existing subscription) to the author of each idea used in "Pit Tips." "Top Tip" winners receive an OFNA Z-10 Rally kit. All published "Pit Tip" authors receive an OFNA yo-yo. Send a rough sketch to Bob Hastings, c/o Radio Control Car Action, 100 East Ridge, Ridgefield, CT 06877-4606 USA. BE SURE YOUR NAME AND ADDRESS ARE CLEARLY PRINTED ON EACH SKETCH, PHOTO AND NOTE YOU SUBMIT. We're unable to publish many good tips because we don't have the sender's name and address. Please note: because of the number of ideas we receive, we can neither acknowledge every one nor return unused material.



O-RING KING

Small O-rings make excellent fuel-tubing clamps. Use needle-nose pliers to stretch the O-ring and feed the fuel tubing through. The extra tension of the O-ring supplies greater gripping power than the tubing alone, especially on flanged fittings.

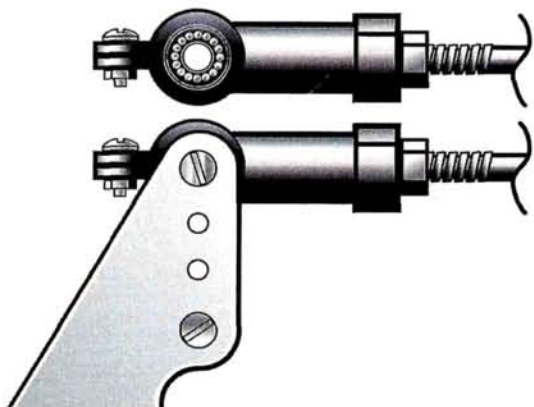
BRIAN WINCH
Lurneau, Australia



GET THE BENDS

Brass tubes are great for building custom monster truck chassis, but it's tough to make them bend smoothly. A replacement caster for a screen door makes a great tube bender; just clamp a locking pliers next to the roller to serve as a guide and handle, then feed the tube through and push it against the roller for a smooth, kink-free bend.

WAYNE T. HERIN
Stockton, CA



LUXURY LINKAGES

For a more precise action and reduced friction, try using ball-bearing clevises instead of ball cups when assembling cantilever linkages on aftermarket monster truck chassis. Clevises are available in the model-airplane section of your hobby store.

CHESTER PILTON
Paris, TX

HOMEMADE HANDSAW

Trackside RC car maintenance doesn't usually call for a hacksaw, but when you need one, you need one. Here's an easy way to keep a hacksaw handy without lugging around a big hand tool. Prepare a hacksaw blade by slipping a piece of split fuel tubing over about 6 inches of the toothed edge, then wrap the blade with heavy tape to form a handle (the fuel tubing helps to prevent the teeth from poking through). If you have access to a grinder, skip the fuel tubing and grind the teeth off the "handle" end, and grind the blade down to make a smaller tool for tight spots, as shown. Wear eye protection, and handle the blade with care!

C. MILTON PEACOCK
Finksburg, MD



NO MORE SPILLS

A scrap of foam rubber is a cheap way to avoid spilling CA when you glue tires. Just slit the foam and force the bottle of CA into the opening. You can now worry less about spills and concentrate on getting your fingers unglued.

JACK KAHERE
Thermopolis, WY

Pit Tips

PIPE HANGER DRESS-UP

Ugly pipe hangers aren't the hot setup for a tricked-out nitro car. For a custom look, slip fuel tubing over the wire hanger to match the tubing on your fuel system.

*HANK MEDEIROS
Fall River, MA*

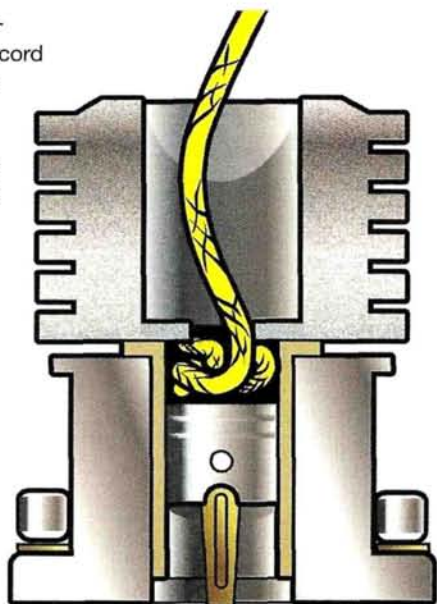


PISTON STOPPER

If you need to disassemble your nitro engine's clutch but don't have a piston-locking tool, you can lock the piston with nylon cord. Just feed the cord into the combustion chamber through the glow-plug opening until enough cord is coiled in the chamber to prevent the piston from completing a revolution.

*DAVE COOPER
Napier, New Zealand*

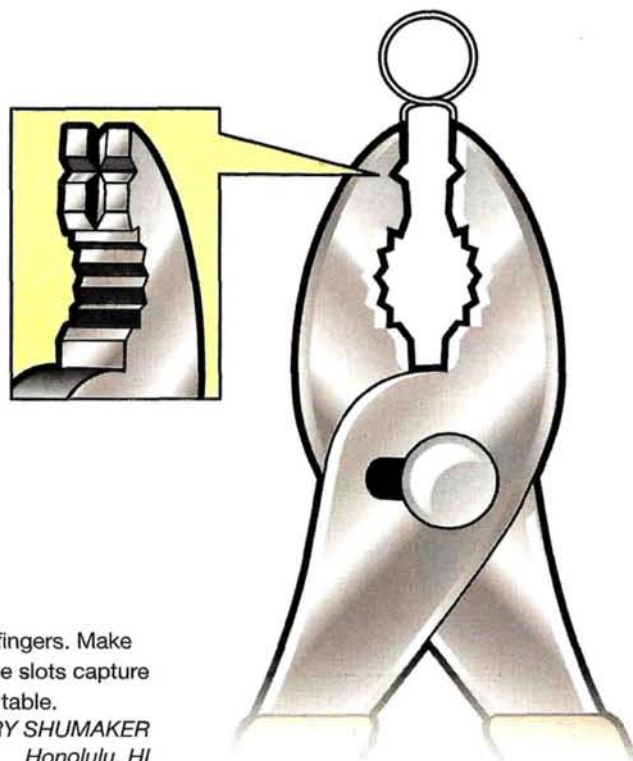
TOP TIP



CLIP GRIPPER

Wire clamps are great for keeping fuel lines secure, but they can be tough on your fingers. Make it easier to install and remove the clips by cutting slots in the jaws of your pliers. The slots capture the clamp, so it doesn't jump out of the jaws and into the black void under your pit table.

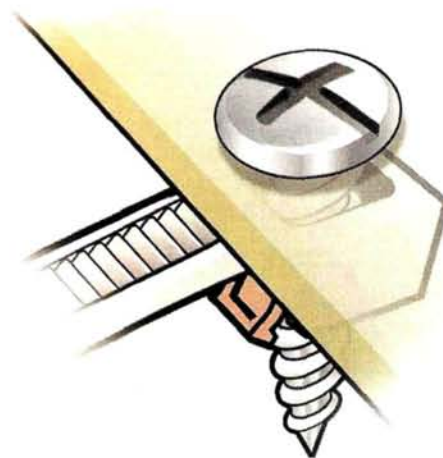
*JERRY SHUMAKER
Honolulu, HI*



FIT TO BE ZIP-TIED

If you have a monster truck or a custom chassis that uses zip-ties as battery hold-downs, you can make "permanent" zip-ties by screwing the "handle" and "buckle" ends of a reusable zip-tie to the chassis.

*HAROLD T. JAMIS
Dayton, OH*



Troubleshooting

BY GEORGE M. GONZALEZ

E-Maxx won't wheelie

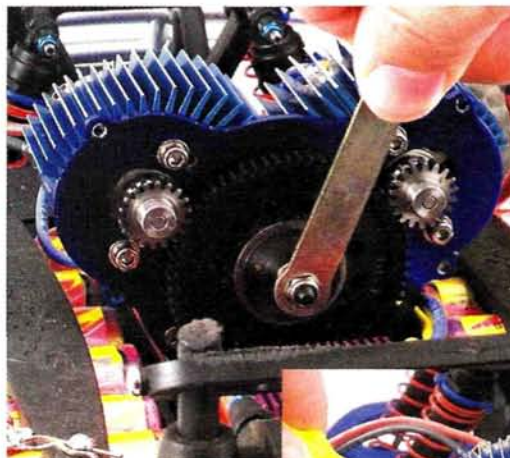
Since I was given it two months ago, I've raced my Traxxas E-Maxx every day in a dried-out wash. When it was new, it pulled wheelies even in second gear. Now it doesn't do them.

I suspected that the slipper clutch was loose, so I removed the gear cover but found that it was tight. I tightened the nut that secures the tension spring to the slipper-clutch shaft until the spring was completely compressed and tried again, but the truck still doesn't wheelie. Do you think that the Titan motors are worn out?

ROBERT NEHER

Rowland Heights, CA

Good call, Robert; I would have checked the slipper clutch first, too. I doubt that the Titan motors are worn out because they're designed to last a long time. There are several possible reasons why your truck doesn't wheelie anymore, but my guess is that one of the motors has a loose pinion gear. Vibration can loosen the setscrews that secure the pinion gears to the motor shafts. If this happens to one of the pinions, the truck will still operate, but only one motor will provide drive. This puts excessive loads on both motors and the speed control. Put a drop of medium-strength liquid thread-lock on each setscrew before you tighten the pinion gears, and you should be able to drive your truck on its rear wheels all day.



If the slipper is too loose, your E-Maxx will never get its front wheels in the air.

For security, apply thread-locking fluid to the pinion setscrews; medium strength is best.



New Traxxas Aluminum Shock Components Work With Your Stock Parts!

T-Maxx Blue Shock Bodies



CNC machined, blue anodized aluminum shock bodies, sold in pairs. RRP 8511

Blue Lower Spring Retainers



Machined, blue anodized aluminum retainers, sold in pairs. RRP 8516

Aluminum Upper Spring Retainers



Machined upper spring retainers, sold in sets of 4. RRP 8530 8mm, RRP 8520 4mm

T-Maxx Silver Shock Bodies



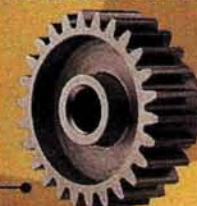
CNC machined, natural silver aluminum shock bodies, sold in pairs. RRP 8510

Silver Lower Spring Retainers



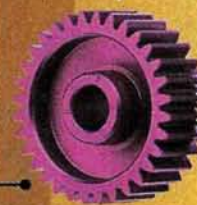
Machined, natural silver aluminum retainers, sold in pairs. RRP 8515

48P Absolute Series Pinions



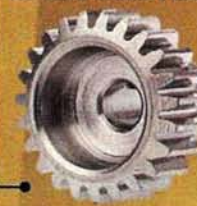
Super hard, lightened and cut with unmatched precision. Great with any spur, but with an Absolute spur, even off noise is gone! Available in 48P in 16T thru 28T sizes. RRP 1416 - RRP 1428

48P / 64P SuperLite Aluminum Pinions



They're lightened, hard coated and precision cut. Available in 48P in 16T thru 28T and 64P in 24T thru 38T. RRP 30XX (48P) and RRP 31XX (64P). Only \$5.25

48P Hard Nickel Plated Steel Pinions



These precision cut gears have an extremely hard coating that makes them really last. Available in 12T thru 35T. RRP 1012 - RRP 1035

Uncontrollable Mini Z

A couple of friends and I recently bought Kyosho Mini Z racers because we want to race indoors when it's raining outside and we can't race our 1/10-scale cars. The Minis are a lot of fun, but they are very hard to control and, for some reason, we just can't trim them out to steer straight. Can we do anything to make them handle a little better?

JASON VALERIO

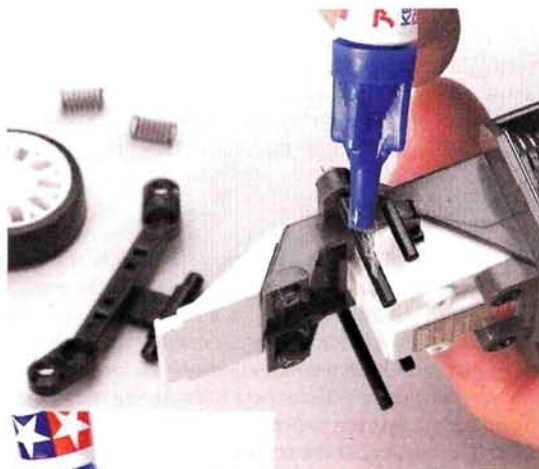
Plano, TX

It's funny that you bring this up, Jason, because my friend and I had the same problem with our Mini Zs. We discovered a couple of things that helped to make them a little more controllable.

First, we packed the bevel-gear diffs with heavy grease to slow the diff action; this works well but last only a couple of runs because the grease is flung off the gears and sticks to the diff case. Eventually, most of the grease leaks out, so this is only a temporary fix. I suspect that Kyosho's optional ball diff will help a lot and prove to be a more permanent solution.

Second, we weighted the cars down a bit by adding lead weights to the chassis. These little cars are light and fast, and the extra weight makes them a little more stable.

Third, try putting thick grease such as Trinity's Purple Stuff on the front coil springs for a little more damping to help the car transition better. Try these tweaks on your Mini Z racer, and I'm sure you'll find it easier to handle.



Thick grease can also be used to damp the front suspension and for less twitchy handling.



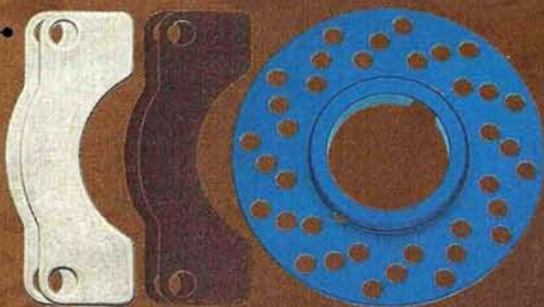
Apply heavy grease to the differential gears for tighter diff action.

NEW T-Maxx Steel Diff Gear Set



T-Maxx / E-Maxx differential gear set, includes: 1 beveled pinion gear, 1 beveled spur gear, 4 re-usable stainless steel Phillips head screws, 1 tube Associated Black Grease, and a shim kit for spider gears with .003" shims. 2 sets needed per truck. RRP \$590

NEW T-Maxx Aluminum High Performance Brake Kit



New, lightweight aluminum high performance brake kit, includes bigger, more aggressive brake pads and steel backing plates. One piece vented rotor minimizes side-to-side wobble. RRP \$560

T-Maxx Vented Flywheels



Aluminum vented flywheels move air over clutch bell, improving performance and cooling. RRP \$551 Blue, RRP \$550 Natural Silver



Hardened Steel Spur Gear With Ball Bearing



Precision CNC machined from solid steel, and then hardened, these spurs will last and last. RRP \$572 T-Maxx and Nitro Rustler, RRP \$565 Nitro Stampede

ROBINSON RACING PRODUCTS

4968 Meadow View Drive · Mariposa, CA 95338 · Voice 209.966.2465 · Fax 209.966.5937

Troubleshooting

Tough-to-steer T-Maxx

I have a Traxxas T-Maxx truck, and I abuse it regularly. I have modified it with a Picco .15 engine and all kinds of aluminum hop-ups from Traxxas and Hardcore Racing, but it just doesn't steer sharply. It still has the stock 2055 servo; could that be the cause of my problem? If I need a new servo, which kind should I buy?

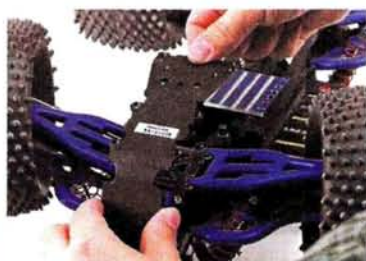
RILEY HOUGHTON

Lynchburg, VA

With all those aluminum hop-ups, your truck is carrying more weight now, and it's safe to assume that it's also considerably faster with the Picco mill. Buying a servo with more torque and speed certainly wouldn't hurt, but don't write off the stock 2055 servo just yet. Check your steering system for binding. Remove the front wheels and disconnect the steering rods from both steering knuckles. Test the bellcrank to see whether it pivots freely; if it doesn't, disassemble the steering bellcrank, thoroughly clean the parts and relube the bushings before reinstalling the steering system. Next, unscrew the pillow balls from the upper and lower suspension arms and inspect them. Do they pivot freely and fall under their own weight? If they don't, you should loosen the pillow-ball caps slightly with the 4mm Allen wrench provided with the truck. Think about buying a Kimbrough, Serpent or GS Racing heavy-duty servo-saver; they have stronger internal tension springs and are designed for heavy-duty applications. At a cost of approximately \$8, they're a wise investment. If you still need more steering, then consider buying that high-torque servo. Airtronics, Futaba, Hitec, JR Racing, KO Propo and Multiplex all offer servos that will fit the bill. Be sure to pick up a servo with at least 90 oz.-in. of torque; the more torque, the better.



Disengage the servo to test the steering system. The bellcranks, linkages, and steering hubs should swing easily and smoothly, with no tight spots.



You'll need to remove the front skid plate to access the bellcranks.



Overtightened pivot balls can cause slow steering response. Adjust the pivot ball retainers for smooth action without "slop."

RS4 Nitro Aluminum Brake Kit



Lightweight aluminum, variable braking system. RRP 1575

RS4 Nitro Vented Flywheel



Aluminum vented flywheels move air over clutch bell, improving performance and cooling. RRP 1570 RRP 1571 Pull Start

Stealth Sedan Spurs



These precision machined spur gears are super quiet. They're available in 48P in 60T thru 96T sizes, and fit any HPI electric car or truck. RRP 1860 thru RRP 1896.

RS4 Nitro Small Aluminum Drive Pulleys



Hardened drive pulleys, sold in pairs. RRP 1538

RS4 Top Shaft Pulley



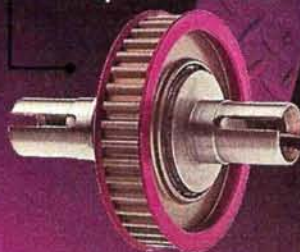
One piece pulley and shaft are precision cut and hard anodized. Purple anodized side flanges are pressed on. RRP 1527

RS4 / Pro / Pro2 / Nitro Aluminum Outdrives



40% lighter than stock ball diff outdrives. RRP 1585

RS4 Complete Ball Diff Units



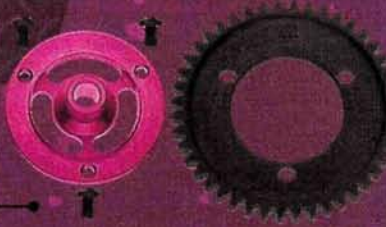
Hardened steel outdrives, ground and polished thrust washers, 2 5x8mm ball bearings, and aluminum pulley. RRP 1590 Electric RRP 1595 Nitro

RS4 Diff Pulleys



Precision machined, hard anodized aluminum diff pulleys. RRP 1539 nitro sedans RRP 1528 electric sedans

RS4 Nitro Lightened Gear Adapter



This lightened gear adapter includes a machined nylon spur that's tougher than the stock gear and will last longer. RRP 1535

www.robinsonracing.com

RS4 Nitro 32 Pitch Conversion Kit is available. RRP 1536

Looking for Speed

I recently bought an electric Traxxas 4-TEC RTR. I still have two 7.2V stick packs from my old RadioShack car. Will these batteries work in my new car? Also, are there any cheap upgrades that I could use to make my car go as fast as possible? [email]

ZACH

If the 7.2V RadioShack packs are built with 6, sub-C cells, they'll fit your car and power it just fine, but the packs probably have lower capacity cells because toy-class RC cars usually have smaller, 380 motors that draw fewer amps from the batteries. Your 4-TEC's 20-turn motor is more powerful than any toy car motor, and it will drain those RadioShack packs much more quickly than the motor they came with did. You'd be better off with a couple of 6-cell, hobby-class, 7.2V packs (1500mAh or higher); they will give you longer run times and more speed.

As far as hop-ups go, your first should be an electronic speed control (ESC), like the Novak Fusion seen here. An ESC will allow your car to accelerate more smoothly with greater control, and you'll enjoy longer run times. The second upgrade should be a full set of ball bearings; they reduce friction and reduce play in the drive-train parts. You can get them individually or in sets, like the pictured kit from Dynamite. With these upgrades, your car will be ready for a hotter motor. Any of the brands detailed in the "Machine-Wound Mod-Motor Shootout" (August 2000 issue) would be a good match; try a 15-turn motor. A Team Orion Orbital is shown. ■

A machine-wound modified motor ...

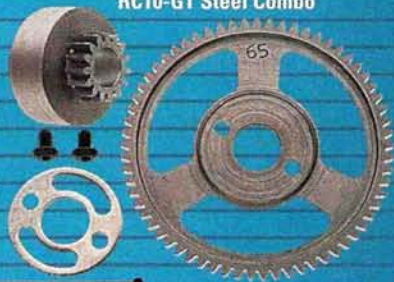


... electronic speed control ...



... and ball bearing set will make the most impressive changes to your car's speed, and overall performance.

RC10-GT Steel Combo



Precision machined from solid steel, then hardened, this 65T spur and 15T bell combo will last and last. The extra-hardened clutch bell fits ALL Associated and MIP shoes. RRP 2365

www.robinsonracing.com

Hardened Steel Idler Gear



Cut from solid steel stock, this gear is lightened and hardened for super quiet precision and extra long life. Jammin' tranny grease is included. RRP 2213 RC10-GT, RRP 7505 Ultima GP-R

Associated Titanium Stealth Top Shaft



CNC Machined from solid titanium, this super hard, super light top shaft will fit any Stealth transmission. RRP 1512.

Hardened Diff Gear



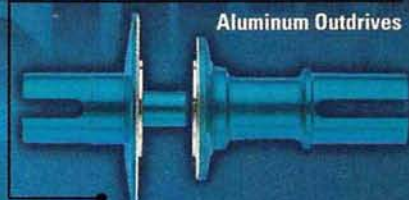
Hard anodized, precision CNC machined aluminum diff gear. RRP 1513 RC10-GT RRP 7500 Ultima GP/EP-R

Blue Lightened Slipper Kit



The rear plate is hard anodized and the front plate is color treated. The front plate holds the pad forcing it to slip on the rear plate. When pad wears, just flip it over for a new surface. RRP 1515 Associated, RRP 7515 Kyosho Ultima

Aluminum Outdrives



40% lighter than stock ball diff outdrives. RRP 1475 TC3, RRP 1502 B3/T3

TC3 Ultra 48 Pitch Spurs



Precision machined from heat-resistant plastic, these spurs mesh flawlessly with our pinions. Available in even numbers from 70T thru 80T, RRP 1670 RRP 1680.



ROBINSON RACING PRODUCTS

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OFNA Ultra GTP RTR



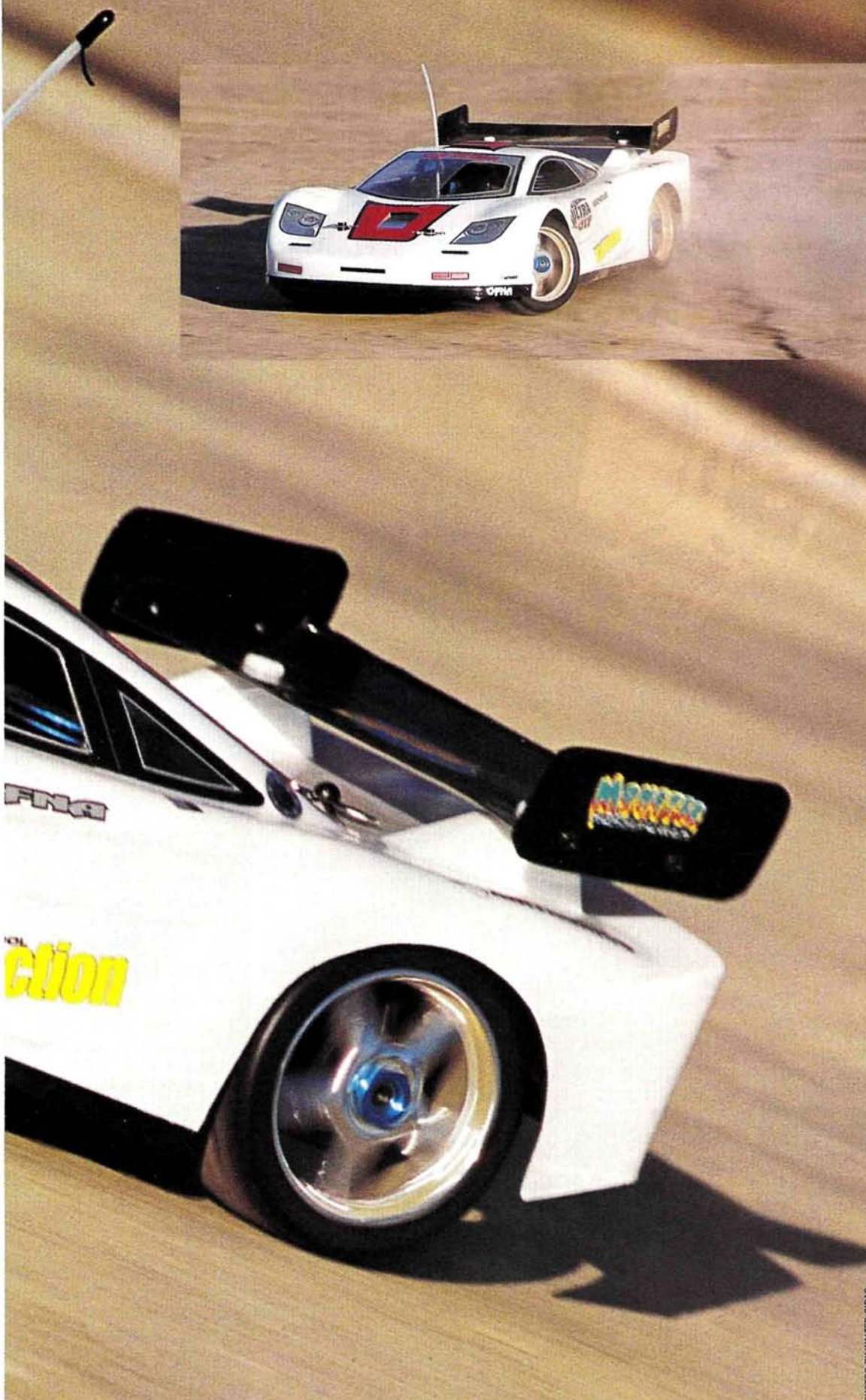
1/8-Scale Buggy Tech Hits the Street

by George M. Gonzalez

What do you get

when you wrap a low-slung GT-1-style on-road body over a race-proven, 1/8-scale fuel-powered off-road buggy? You get an all-new class of on-road vehicle OFNA calls the "Ultra GTP." The folks at OFNA took the concept even further by modifying the front suspension geometry for on-road duty and offering extensive factory assembly that includes the installation of a high-quality Airtronics Blazer Sport radio system.

If you like hop-ups, the Ultra GTP is loaded with hot features such as front and rear swaybars, aluminum-body shocks, turnbuckles, constant-velocity (CV) front axles, a tuned pipe and header and much more. I was eager to take the Ultra GTP on a test drive; care to join me?



DATA CENTER

VEHICLE TYPE 1/8-scale, .21 powered, 4WD street racer

BEST BUYER Beginners and experts who are looking for a fast and fun recreational on-road vehicle

KIT RATINGS (poor, satisfactory, good, very good, excellent)

Instructions Satisfactory

Parts fit/finish Good

Durability Excellent

Overall performance Good

SPECIFICATIONS

MANUFACTURER OFNA

MODEL Ultra GTP

SCALE 1/8

STREET PRICE \$399.99

DIMENSIONS

Wheelbase 12.625 in. (320.67mm)

Width (F/R) 11.875 in. (301.62mm)

WEIGHT

Total, as tested 132 oz. (3,742.2g)

CHASSIS

Type Double-deck

Material Aluminum

DRIVE TRAIN

Type Shaft-drive 4WD

Transmission Ring and pinion gears

Drive shafts Universals

Primary Clutch bell/spur gear

Drive shafts (F/R) CV axles/dogbones

Differentials (F/R) Bevel gear

Bearing type Metal-shielded ball bearings

SUSPENSION

Type (F/R) Double-wishbone/lower H-arm upper link

Damping Aluminum-body, coil-over, oil-filled shocks

WHEELS

Type One-piece nylon

TIRES

Type Mounted treaded radials; street slicks (four of each type)

ENGINE AND ACCESSORIES

Engine OFNA/Force .21

rear-exhaust

Starter Pull-starter

Carburetor Slide

Exhaust Aluminum tuned pipe and header

Fuel capacity 125cc

LIKES

- 100 percent factory-assembled chassis.
- Very fast and nimble.
- Extremely rugged.
- Feature-filled chassis.
- Two sets of factory-assembled tires and wheels.

DISLIKES

- Body is a little out of scale, doesn't fit any particular class and should be constructed of thicker Lexan.



Sweet. Chrome wheels with slick tires are included, and the blue nuts are standard. OFNA even throws in a spare set of treaded tires and rims to go with them.

building & setup tips

The Ultra GTP chassis arrives completely assembled with the radio gear neatly installed on the chassis. You have only to install the body mounts and front bumper and paint and trim the body. It may seem like a no-brainer, but here are a few tips that will help.

Receiver care. Wrap the receiver in foam or another type of padding before you put it inside the molded receiver box. This will isolate it from engine vibration.

Onboard battery pack. A 4-cell battery holder is included to make getting started easier and more affordable, but it should only be used with alkaline batteries; four rechargeables will have lower voltage and will not allow the servos to operate to the full extent of their capabilities. A 5-cell, 6V Ni-Cd or NiMH pack will provide a full 6 volts for the steering and throttle servos. The Ultra GTP is heavy and has to rely on standard servos to maneuver it and operate the brakes, so be sure those servos get a full 6 volts.

Air-filter lube. Before running the vehicle, be sure to lubricate the foam air-filter element with air-filter lube or after-run oil. After every three or four tanks of fuel, clean the filter in warm soapy water and then rinse it thoroughly under running water. When it has dried, relube it and reinstall it.

Fuel spout. If you use a soda bottle as a fuel container, be sure to clean it thoroughly with soap and water and let it dry completely before you install the included fuel spout and fill it with nitro fuel. And be sure to label it "DO NOT DRINK!"

Engine break-in. Somewhere toward the back of the manual, you'll find engine break-in instructions. Follow them to the letter and don't take any shortcuts. The engine will be very stubborn for the first three or four tanks of fuel and will have to be restarted frequently.

OFNA makes no attempt to disguise the GTP's off-road roots, and there's no mistaking the suspension and chassis parts for buggy hardware. As you can see, everything is more than beefy enough for road duty. The swaybars are especially welcome on pavement.

YOU'LL NEED ■ 12 AA cells (8 for the transmitter and 4 for the onboard electronics) ■ C-size alkaline battery for the included glow-plug igniter ■ Fuel ■ Lexan-compatible paint for the body ■ 16-ounce soda bottle (for use as a fuel bottle)

FACTORY OPTIONS

■ 2-speed transmission—part no. 35001 ■ Rear CV joints—30071 ■ Graphite radio plate—31280 ■ Graphite front brace—31270



KIT FEATURES

• **Chassis.** The Ultra GTP features the same robust, double-deck chassis as the Ultra GT/LX and Ultra MBX off-road buggies. A fully countersunk, 3mm-thick, blue-anodized-aluminum chassis serves as the foundation. A 2.5mm-thick, blue-anodized aluminum radio plate houses all of the onboard electronics and is suspended above the chassis on five aluminum posts. A two-piece aluminum front chassis brace and a one-piece rear brace increase chassis rigidity significantly, and they're blue-anodized to match the rest of the chassis components. A heavy-duty, twin-bellcrank steering system with a servo-saver built into one of the bellcranks pivots smoothly on aluminum posts. Up front, there's a heavy-duty on-road bumper with a foam body support.

• **Drive train.** A stout shaft-drive system provides continuous 4WD. The inline-mounted engine's clutch bell is mated with a steel, center-mounted spur gear, and the power is transferred to the front and rear bevel-gear differentials via steel dogbones and ring and pinion gears.

CV axles up front and steel dogbones in the rear provide the final drive, and the drive train and wheels spin on shielded ball bearings. Stopping power is provided by a stainless-steel disc brake with aluminum-and-rubber brake pads. This is essentially the same drive train as the Ultra GT/LX and Ultra MBX off-road buggies use (minus the center diff and one brake disc); it should prove to be a bulletproof on-road drive train.

• **Suspension.** The Ultra GTP features a fully adjustable, double-wishbone front suspension. To allow easy camber and front-track width adjustments, large-diameter pillow balls are used to attach the front knuckle arms to the upper and lower suspension arms. The upper wishbones pivot on large-diameter hinge pins and can be moved forward or backward to increase or decrease front caster. The included clip-on spacers allow you to make accurate adjustments.

For additional tuning, the upper arm mounts have two mounting positions, and setscrews threaded into the front and rear suspension arms allow down-travel to be adjusted. A low-profile aluminum front shock tower and short, aluminum-body on-road shocks with rubber dust boots provide the proper on-road suspension geometry. An adjustable front swaybar allows front body roll to be altered to suit conditions.

In the rear, you'll find extra-long H-arms and adjustable upper links. Extra-beefy tie rods allow camber to be adjusted, and the blue-anodized aluminum rear shock tower has several upper shock-mounting and inner camber-link-mounting locations for extra tuning capability. A thick, adjustable rear swaybar allows rear body roll to be altered, and the rear suspension-arm mounts feature toe-in cams that can be set for 1 or 1.5 degrees.

• **Engine and accessories.** The Ultra GTP comes with the OFNA/Force .21 engine installed. It features ABC construction, a slide carb, a blue-anodized-aluminum cooling head and a handy pull-start mechanism. A lightweight aluminum flywheel, 3-shoe racing clutch and a ball-bearing-supported 14-tooth steel clutch bell are installed on the engine. The Ultra GTP also includes a header, a tuned pipe and a large air filter, all of which are securely mounted. As a bonus, the Ultra GTP includes a Pico glow plug, an igniter and a fuel spout that can be used to convert a standard soda bottle into a fuel bottle.

• **Body, wheels and tires.** Of the RC vehicles I've tested, this is the first to include two complete sets of tires that have been mounted and

glued to the wheels. That's right! The car comes with a complete set of treaded street radials mounted on black, 5-spoke wheels and a set of slicks mounted on chrome 5-spokes. The tires have foam inserts and have been expertly bonded.

The Ultra GTP comes with your choice of a Viper body or McLaren body in clear, which I used for this "Track Report." OFNA plans to release more bodies for the Ultra GTP chassis in the near future.

PERFORMANCE

The Force .21 engine refused to start on the first attempt, and I was baffled for a time. I checked the glow plug, which was "glowing" as it should, so I reinstalled it, made

No plastic pipes here; the GTP includes an aluminum pipe with a long belly for a broad powerband. There's enough power for a taller gear ratio, or the optional 2-speed.



The Ultra GTP does not have a center diff; instead, a machined aluminum mount holds the steel spur gear. Since there's no diff, there's no need for front and rear brakes, and the GTP uses a single vented steel disc for stopping.



INCLUDED TEST GEAR

Airtronics Blazer Sport transmitter and receiver

This is Airtronics' entry-level system, and as such it offers only the basic functions of servo reversing and trims. The lack of throttle endpoint adjustments can make it hard to dial in the linkages on a nitro car, but since OFNA does the job for you at the factory, who cares?

Airtronics 94102 standard servos

In addition to the Blazer transmitter and receiver, standard-type 94102 steering and throttle servos are installed on the chassis. A heavy, fast vehicle like the Ultra GTP usually calls for something stronger, at least for steering, but to my surprise, the standard servos had no problems guiding and stopping the Ultra.

ADDITIONAL TEST GEAR not included

Trinity Monster Horsepower 16-percent-nitro fuel.

The engine responded very well, was easy to tune and ran cool on the Trinity fuel. Nuff said!

Trinity Nitro Metal Hydride receiver pack

Replacing alkaline receiver batteries gets expensive, so I stick with rechargeable receiver packs. Trinity's use NiMH cells for maximum run time; with 1100mAh of capacity, you'll go through a lot of fuel before it's time to recharge.



sure that the high-end needle and low-end air/fuel mixture were set to their default factory settings and tried again. This time, the engine fired after only a few tugs, but it stalled almost immediately. I adjusted the idle speed screw for a faster idle and gave the engine cord a couple more tugs. Bingo; the engine fired and settled into a steady, but slightly high, idle. I let it idle through the first two tanks of fuel with the car sitting on top of an off-duty starter box. I had to adjust the idle-speed screw a couple of times because the engine started to slowly rev up as the piston and sleeve began to wear in. I followed the engine break-in instructions to the letter for four more tanks of fuel, and before I knew it, I had the Ultra GTP blazing around the empty mall parking lot I chose for the test.

If you're looking for a fast car, the Ultra GTP won't disappoint you. It accelerates violently and tops out at 41.7mph. Even so, it felt undergeared, and I'm confident it could handle a taller ratio. With OFNA's optional 2-speed, I bet 60mph would be possible. I was very impressed by how the Ultra GTP handled all the power. It tracked perfectly straight both under power and during hard braking.

Incidentally, the disc-brake system can bring the Ultra GTP from full speed to a dead halt in less than 10 feet, which is impressive for a heavy car with a single disc brake. At high speeds, the Ultra GTP pushed slightly, but it stayed planted when exiting corners under hard acceleration. This makes it incredibly easy to drive. It did exhibit considerable body roll, which was mostly noticeable when going through a slalom course. I decided to try to limit this roll by stiffening the swaybars. I did this easily by sliding the front swaybar's control links forward and the rear swaybar's control links rearward. These little tweaks made a big difference: the car displayed less body roll and was able to hold a tighter line through my slalom course.

I drove the Ultra GTP until the sun went down. It performed faith-

fully even when I was a little sloppy and allowed it to clip a cement parking-space stop at full speed. The impact was so hard that the rear wing was completely torn off and the rear right wheel was cracked. I was very reluctant to inspect the rest of the car because I expected to find a ton of damage. To my surprise, the chassis didn't have a scratch. This thing is a tank!

THE VERDICT

The Ultra GTP is fun, fast and extremely durable—all excellent traits for an RTR vehicle. The shaft-drive 4WD system and supple suspension provide tremendous traction on any on-road surface, and the way the car rolls and sways as it corners enhances the driving experience. Add to that the sounds, smells and gut-wrenching power of the big-block engine and you have the makings of an attractive RC package that should appeal to enthusiasts of all levels.

I had a blast testing the Ultra GTP, and I look forward to installing the optional 2-speed to add to the thrills. It's an exciting vehicle for carving fast laps around your local parking lot, and thanks to its off-road heritage, the Ultra GTP has plenty of hop-up potential and is extra-tough. ■

SOURCE GUIDE

OFNA RACING

22692 Granite Way, Ste. B, Laguna Hills, CA 92653
(949) 586-2910; www.ofna.com.

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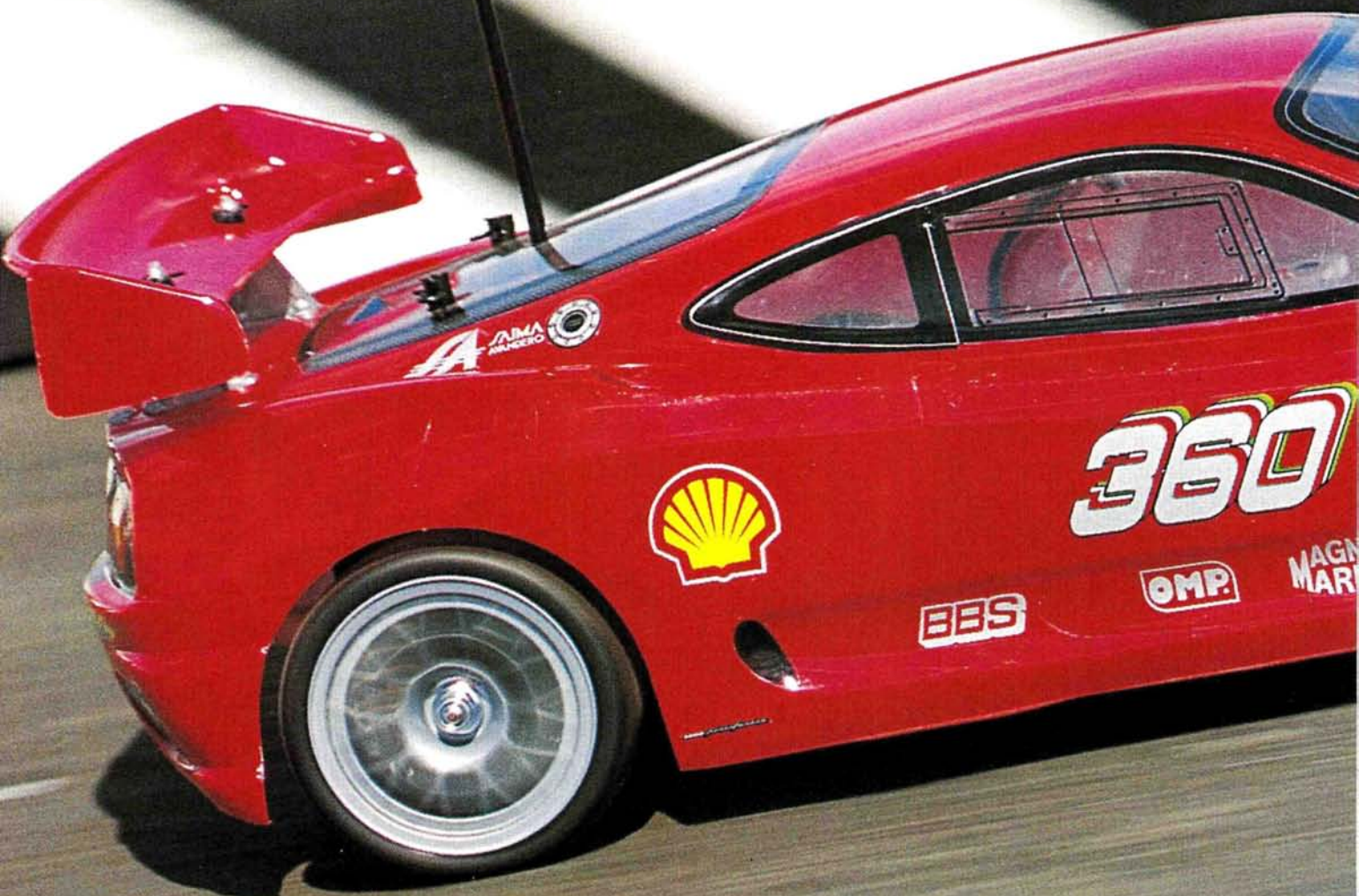
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Tamiya Ferrari 360 Modena TA04



PHOTOS BY WALTER SIDAS



First there was the 414X, Tamiya's limited-production competition touring car and the company's first draft of a true belt-drive tourer. Then came the TA04 Pro, reviewed in the December 2000 issue, a more affordable but still competition-oriented platform sold as a chassis only. Now Tamiya has released the version of the chassis that is likely to be the most popular of the series. Simply called "TA04" but almost certain to be dubbed "TA04 sport" by hobbyists, the everyman TA04 trims costs with a molded chassis and bushed hubs and gear diffs, but it retains ball bearings in the drive train as well as the same well-thought-out suspension and steering geometry of the TA04 Pro. There's even a mechanical speed control and 540 motor to get beginners powered up inexpensively. Best of all, the TA04 "sport" includes a body; so far, the Ferrari 360 Modena Challenge and Loctite Zexel GTR are offered. I built both!

The return of the tub chassis

by Peter Vieira

DATA CENTER

VEHICLE TYPE 4WD, dual-belt, sport touring car
BEST BUYER Scale enthusiasts, first-time builders, entry-level racers, or fans of the full-size Ferrari and Nissan cars.
KIT RATINGS (poor, satisfactory, good, very good, excellent)
Instructions Excellent
Parts fit and finish Excellent
Durability Very good
Overall performance Good

SPECIFICATIONS

MANUFACTURER Tamiya
MODEL Ferrari 360 Modena Challenge, Loctite Zexel GTR
SCALE 1/10
STREET PRICE 360 Modena Challenge, \$249; Loctite Zexel GTR, \$199
DIMENSIONS
Wheelbase 9.9 in. (252mm)
Width 7.4 in. (188mm)
WEIGHT
Total, as tested 55 oz. (1,558g)
CHASSIS
Type Molded tub
Material Plastic
DRIVE TRAIN
Type Dual-belt 4WD
Primary 25T pinion/83T spur gear (3.3:1 ratio)
Drive shafts Steel dogbones
Differentials 3-gear
Layshaft/differential pulley ratio 2.1:1
Final drive ratio 7.07:1
Bearing type Plastic hub bushings/sealed diff and layshaft bearings
SUSPENSION
Type Lower arm w/adjustable camber link
Damping Plastic-body fluid-damped shocks
WHEELS
Type One-piece plastic
TIRES
Type Belted low-profile slick (Ferrari); Tall-sidewall unbelted slick (Zexel GTR)
Compound Type A (Ferrari); hard (Zexel GTR)

ELECTRONICS

Motor 540 stock
Speed control 3-step mechanical with reverse
Transmitter, receiver, servos Not included

LIKES

- Easy, relaxing and rewarding to build and finish.
- Detailed, scale-accurate bodies.
- Top-drawer racing rubber on the Ferrari.
- Big, adjustable rear wings.
- Belts can easily be disengaged from the layshaft pulleys for maintenance.

DISLIKES

- Tub chassis collects parking-lot crud; leaves no escape path for dirt and debris to exit diff area.
- Plastic bushings in hubs.



The tub TA04 shares all of its suspension parts with the TA04 Pro, including the thick, one-piece, capped suspension arms.



I installed the kit-supplied mechanical speed control on the Loctite car. It's a pretty clean setup for a mechanical unit.

building & setup tips

Building is what I enjoy most about RC, so assembling two TA04s back to back on a rainy Sunday afternoon was a perfect day in my book. The tub-chassis TA04 builds easily, and even beginners should have no trouble getting the car together. As usual, Tamiya's manuals are the best in RC, but there's always room to say a little more; these are some notes I made in the margins.

Step 7. The front suspension arms have a piece of sprue that must be removed. Before you snip, look carefully; the thin web of plastic that caps the arm is not waste! You won't hurt anything if you remove it, but the arm will be a little more flexible if you do.

Steps 4 and 8. Pay attention when you install the screws that secure the tops of the transmissions; it's easy to mistakenly put screws in the holes for the optional swaybar's setscrews.

Steps 6 and 10. Remember to insert the foam spacers in the diff outrdrives before you install the dogbones and pop the camber links on.

Step 15. Make sure the top deck is fully seated on the chassis' many molded stand-offs before you sock the screws down. It's a very precise, tight fit.

Step 27. You won't miss the belt tensioner assembly, but if you're wrenching in a hurry, it's easy to overlook the small pinch roller that is installed over the rear layshaft pulley. The car will run without it, but better to have it!

YOU'LL NEED ■ Transmitter and receiver ■ Two servos (or one servo and an ESC) ■ Stick-type 7.2V battery ■ Charger ■ Polycarbonate-compatible paint ■ Tire glue

FACTORY OPTIONS ■ 1150 Sealed ball bearings (four pieces; two sets required)—part no. 53008 ■ TA03 Super Low-Friction Damper set—53280 ■ Front one-way unit—53411 ■ Ball differential—53436 ■ Aluminum heat-sink motor plate—53437 ■ Front swaybar set—53441 ■ Rear swaybar set—53442

KIT FEATURES

• **Chassis.** Unlike the graphite 414X and fiberglass TA04 Pro, the TA04 is built on a molded-tub chassis, Tamiya's traditional chassis form since the Manta Ray. The chassis is designed to hold a stick pack across the width of the car, and molded-in standoffs support a plastic upper deck. The shallow sides of the chassis tub, along with the sills of the battery tray and a single rib that reaches from the tray to the front of the chassis, help provide extra rigidity.



Above: Note the suspension arms' thick webbing and the bulge in the chassis' underside that allows the motor to sit low. The TA04 is solid.



Left: Tamiya's good ol' gear diffs spin in new cases on the TA04. Sealed bearings are standard.

• **Drive train.** The TA04-series drive train is Tamiya's first true belt system. While the TA03 did incorporate a single belt, its only function was to join two gearboxes; a shaft could have done the job, and rumor has it, the TA03 originally used a shaft in place of the belt. Like most belt-drive cars, the TA04 joins a pair of layshaft pulleys with the front and rear differentials via two belts. With the exception of the pinion and spur gear, there are no meshing gear surfaces, so the system is very efficient. An adjustable front belt tensioner is mounted on the top deck and uses a metal bushing to tension the belt. The rear belt is nonadjustable, but a bushed pinch roller holds the belt against the upper pulley. The differentials use Tamiya's time-tested bevel-gear internals, with three spider gears and splined drive cups that are up to much heavier loads than the TA04 will exert on the parts. Plated-steel dogbones get power to the wheels, which spin on plastic bushings. The diffs and layshaft run on rubber-sealed ball bearings.

The front and rear transmission assemblies are modular and can be removed intact. Tamiya even uses a clever aluminum hub for the layshaft pulleys that makes it easy to disengage the front belt and remove the rear transmission intact—handy.

• **Suspension/steering.** The tub-chassis TA04 uses exactly the same suspension parts as the TA04 Pro, which means you get thick, one-piece lower A-arms with threaded camber links. The front end has hub carriers and kingpin-supported steering arms that are joined to the steering bellcranks by threaded tie rods. The bellcranks do not incorporate a servo-saver; it's built into the servo horn instead. The rear hub carriers have two positions for the hinge pin to alter ride height and roll center, as well as two camber-link mounting options.

Tamiya's classic plastic shocks suspend the TA04, and the bladder-equipped dampers operate as smoothly as ever. The shocks are mounted on molded plastic towers that offer two mounting positions for the front shocks and three for the rear. The towers also offer a few inboard camber-link choices; three holes per side up front, five in the rear.

• **Included electronics.** Tamiya's usual 540 motor and mechanical speed control are included with the tub-chassis TA04. Mechanical speed controls in touring cars are usual messy affairs full of brackets, but the TA04 installation is fairly streamlined. The 540 motor is great for run time, but I don't expect much in the way of speed. For a true right-out-of-the-box test, I set up the Zexel GTR with the MSC and 540 motor, but the racier Ferrari got a Trinity Chameleon motor and Novak Fusion ESC. What makes the Ferrari racier? The tires.

• **Body/wheels/tires.** The Zexel GTR and Ferrari Modena TA04s are equipped differently in this department. Of course, both kits are exceptionally detailed and their bodies include overspray film, window masks and officially licensed decal sets, but their rolling stock is not equal. The GTR gets Tamiya's plasticky, tall-sidewall slicks with strip-type foam inserts, while the

KO Propo EX-5 transmitter

The EX-5 is at the low end of KO's line, but it's still a full-feature radio. The LCD screen indicates battery voltage (for the radio, not the car) and displays numerical values for servo center positions, steering and throttle endpoints and dual rate. All trims are adjusted digitally, and the ergonomics are pretty good, too.

Hitec Lynx Sport radio set

I set up the Loctite Zexel GTR with Hitec's budget gear, right down to the included HS303 servos—one for steering and another for the mechanical speed control. I'd like to see Hitec update the Sport with a smaller receiver, but in terms of functions, this reliable, simple system is perfect for first-timers, thanks to its rugged construction and downright low price.

Trinity Maxx Paxx stick packs

Sure, Trinity sells the Maxx Paxx in pairs to suit the needs of Traxxas E-Maxx own-



ers, but I had a pair of cars in need of batteries, and the 1900mAh Ni-Cd Maxx Paxx looked like just the ticket. If you want the same cells and the same performance but need only one pack, buy Trinity's Time Warp stick; the only difference is the label.

Continued on next page

Below: In addition to the Ferrari 360 Modena, Tamiya offers the TA04 tub car with this Loctite Zexel GTR shell. A Corvette C5 is also on the way.



THE COMPETITION

	Chassis	Drive system	Bearings	Shocks	Motor	Speed control	Street price	Reviewed
Tamiya TA04 Ferrari/Zexel	Plastic tub	Dual belt	B. bearings & bushings	Plastic	540	Mechanical	\$249/\$199	6/01
Associated TC3 Racer	Plastic semi-tub	Shaft	Ball bearings	Aluminum	Not inc.	Not inc.	\$160	2/00 (Team version)
HPI RS4 Sport 2	Fiberglass plate	Dual belt	Ball bearings	Plastic	Not inc.	Not inc.	\$170	11/00
Tamiya TL01	Plastic monocoque	Shaft	Plastic bushings	Plastic	540	Mechanical	\$110	4/99
Traxxas 4-TEC	Plastic plate	Dual belt	Ball bearings	Plastic	20-turn	Mechanical	\$125	5/98

TEST GEAR

Continued from previous page

Trinity Chameleon motor

Trinity designed the Chameleon as a faster-than-stock rebuildable spec-racing motor, but the features that make it great for competition also make it great for play. The endbell is fixed, so you don't have to worry about timing or reversed polarity when you rebuild it; and yes, it is fully rebuildable, so it will last a long time. And since it's a mild 19-turn wind, your packs will last a long time, and you'll still go a lot faster than you would with a plain-can 540.

Novak Fusion ESC

The forward-and-brake Fusion is one of Novak's most affordable ESCs, and it's packed with features. In addition to thermal-overload and reverse-polarity protection, the Fusion offers Polar Drive for cool running, and its Radio Priority Circuitry keeps you in control no matter how deeply you dump your pack. But the Fusion's top feature is its dual profile; the one-touch button used for setup also allows you to switch the Fusion between a punchy stock-motor setting and a higher-frequency (7800Hz) profile for mod-motor use.

Novak XXL receiver

There was nothing wrong with the KO EX-5's receiver, but the smaller XXL was a better fit on top of the steering servo, and it looks really good opposite the Fusion ESC. The XXL also sports an internal shield for extra interference protection, and it features reverse-polarity protection and ultra-narrow-band operation for glitch resistance. Plus, it's just cool.

Are you up to the challenge?

I'm sure anyone who's into cars at all would be up to the Ferrari Challenge, the globe-trotting spec class in which the 360 Modena Challenge is meant to compete. Unfortunately, step one in entering the challenge is ponying up for the race-prepped Ferrari 360 Modena spec car. Needless to say, it ain't cheap, and thus the Ferrari Challenge is populated by Ferrari dealers and people with silly money

(I like to think they don't even drive that well—sour grapes). The race version of the Modena is equipped with Ferrari's F1 gearbox, quick releases on the front and rear hoods, towhooks, lowered suspension, Brembo brakes and BBS rims with Pirelli P Zero slicks. To protect the Walter Mitty types lucky enough to drive away from a green flag in one of these bad boys, all Challenge cars are fitted with Plexiglas windows, a racing seat and six-point harness, FIA roll cage, automatic fire extinguisher and a Magneti Marelli digital instrument with data-capture system.

While this type of racing may not be accessible to 99.9 percent of us, we can all take heart that a Tamiya 360 Modena Challenge is just a trip to the hobby store away; and even if you add every hop-up, matched packs, hand-wound mod motor and a computer radio, it will probably still cost less than the shift knob of the full-scale car.

The Loctite Zexel GTR wears hard slicks with strip inserts (right), while the Ferrari licks out with belted low-profile slicks in sticky "Type A" compound (below).



Ferrari gets firm, molded inserts with sticky "Type A" belted rubber. That's a combo good enough to compete with if you get the racing bug, but in play mode, the tires won't wear long. Although inferior in terms of performance, the GTR's hard-compound tires will hold up to many packs' worth of parking-lot play.

Both kits include the same substantial rear wing with molded standoffs and two-position angle of attack. Although it isn't scale for the Ferrari, I installed it because it was too cool-looking not to!

PERFORMANCE

I took the Loctite Zexel GTR out first, to get a feel for what the bone-stock TA04 tub car could do. I was surprised by how quick the car was; the silver-can 540 motor was good for a radar-confirmed 18.1mph, with plenty of punch out of the hole. I don't recall Tamiya's gearbox tourers ever getting that much yank out of their 540s—belt drive rules! The Loctite Zexel GTR's hard kit slicks provided little real grip, but made for easy pitch-it-sideways driving, and the firm compound will last for months.

With more performance in mind, I broke out the Chameleon-powered Ferrari, and the fun factor went up a couple of clicks along with the speed. The sticky, belted tires hooked up well despite the grit of the unswept parking lot I tested the car on, and would certainly be more than race worthy on a real racetrack.

Like most full-time 4WD sedans, the Modena pushed in the turns unless I clipped the throttle to loosen up the rear end, in which case it slid predictably. High-speed sweepers required just a little

attention to keep the car on the edge of pushing, but I'm sure a cleaner parking lot would have helped.

Like most parking areas in their "natural state," my test area was downright sandy and littered with gravel "marbles" at its edges. I couldn't resist pitching the TA04s sideways through the stuff for a full-opposite-lock smoke show (or dust show, to be more precise), and I occasionally broadsided the curb in the process. Both cars took it all in stride and suffered only scuffs, but I did notice much sand and debris dancing around inside their chassis tubs, and there wasn't any way to get it out other than flipping the car over and giving it a good shake. I never fouled a belt, but this could lead to trouble. My advice? Dump out the car between runs.

THE VERDICT

The good news is that both of the TA04 tub cars are high-quality, highly detailed machines that are fun to build and more fun to drive; the bad news is they're expensive. Compared to some of the "sport" touring kits from other brands, not to mention some kits in Tamiya's own line, the tub TA04s don't offer as much go for the dough. However, they are genuine Tamiya, and if the quality that name stands for is important to you—especially if you simply must have an accurate RC reproduction of a Ferrari 360 Modena—the extra cost might not be so worrisome to you. But when coldly measured by features per dollar, these two TA04s come up long on detail and scale accuracy but short on features. ■

SOURCE GUIDE

HITEC RCD INC.

12115 Paine St., Poway, CA 92064; (858) 748-6948; www.hitecrcd.com.

KO PROPO

16012 South Western Ave., Ste. 308, Gardena, CA 90247; (310) 532-9355; info@kopropo.com; www.kopropo.co.uk.

NOVAK ELECTRONICS INC.

18910 Teller Ave., Irvine, CA 92612; (949) 833-8873; www.teamnovak.com.

TAMIYA AMERICA INC.

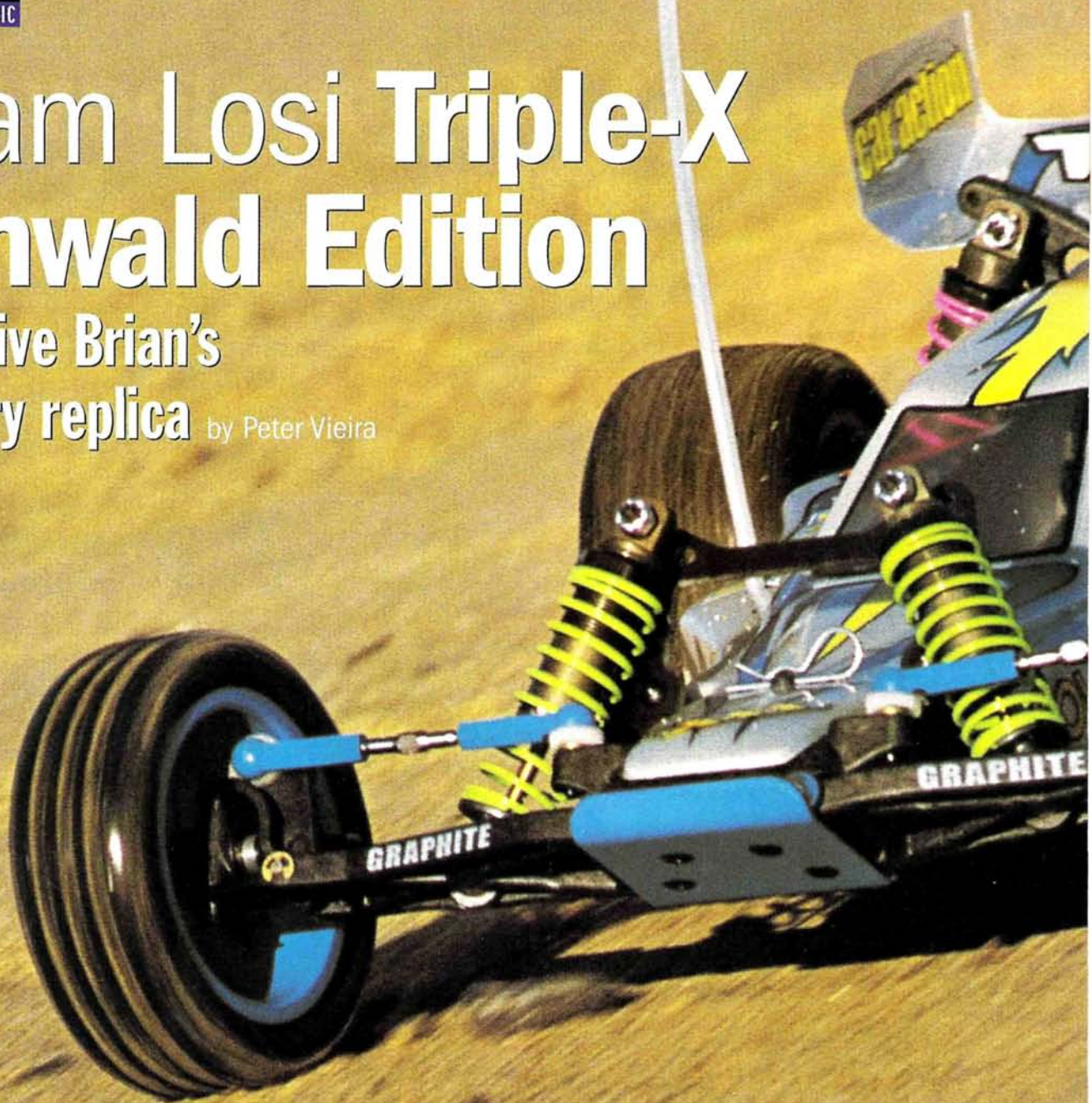
2 Orion, Aliso Viejo, CA 92656-4200; (800) TAMIYA-A; www.tamiya.com.

TRINITY PRODUCTS INC.

36 Meridian Rd., Edison, NJ 08820; (732) 635-1600; www.teamtrinity.com.

Team Losi Triple-X Kinwald Edition

We drive Brian's
factory replica by Peter Vieira



It's not the car. Brian Kinwald wins races because he has talent, and that talent is backed by experience, and that experience comes from competing in hundreds of events and racking up countless hours of practice ... but the car doesn't hurt. As a Team Losi driver, Brian runs the innovative Triple-X buggy—a capable machine straight out of the box. But as you would expect, Brian doesn't race his straight out of the box. For world-class competition, Brian modifies his car with a full range of Team Losi works parts, from graphite chassis components and lightweight tranny parts to threaded shock bodies and titanium tie rods. You can get them, too—for a price—and add them to your kit, or you could just buy a Triple-X Kinwald Edition. It will cost you more than the standard X-car but much less than buying the stuff separately; and you'll have an official Kinwald machine. Will that get you faster laps or just get you bragging rights? I bet the Kinwald Triple-X will get you both.



DATA CENTER

VEHICLE TYPE 2WD electric competition off-road buggy

BEST BUYER Team Losi fans, gotta-have-the-hop-ups types, racers and Kinwald wannabes

KIT RATINGS (poor, satisfactory, good, very good, excellent)

Instructions Very good

Parts fit and finish Good

Durability Very good

Overall performance Excellent

SPECIFICATIONS

MANUFACTURER Team Losi

MODEL Triple-X Kinwald Edition

DISTRIBUTED BY Horizon Hobby

SCALE 1/10

STREET PRICE \$250

DIMENSIONS

Wheelbase 10.79 in. (273.9mm)

Width 9.66 in. (245.3mm)

WEIGHT

Total, as tested 53.2 oz. (1,509g)

CHASSIS

Type Molded semi-tub

Material Graphite/plastic composite

DRIVE TRAIN

Type Sealed gearbox

Primary Pinion/spur gear

Drive shafts MIP CVDs

Differential Ball type, externally adjustable

Transmission ratio 2.43:1

Slipper clutch Dual-pad

Bearing type Teflon-sealed ball bearings

SUSPENSION

Type Lower A-arm with titanium turnbuckle camber links

Damping Threaded, aluminum-body, fluid-damped shocks

WHEELS

Type One-piece dish, "Cool Blue"

TIRES

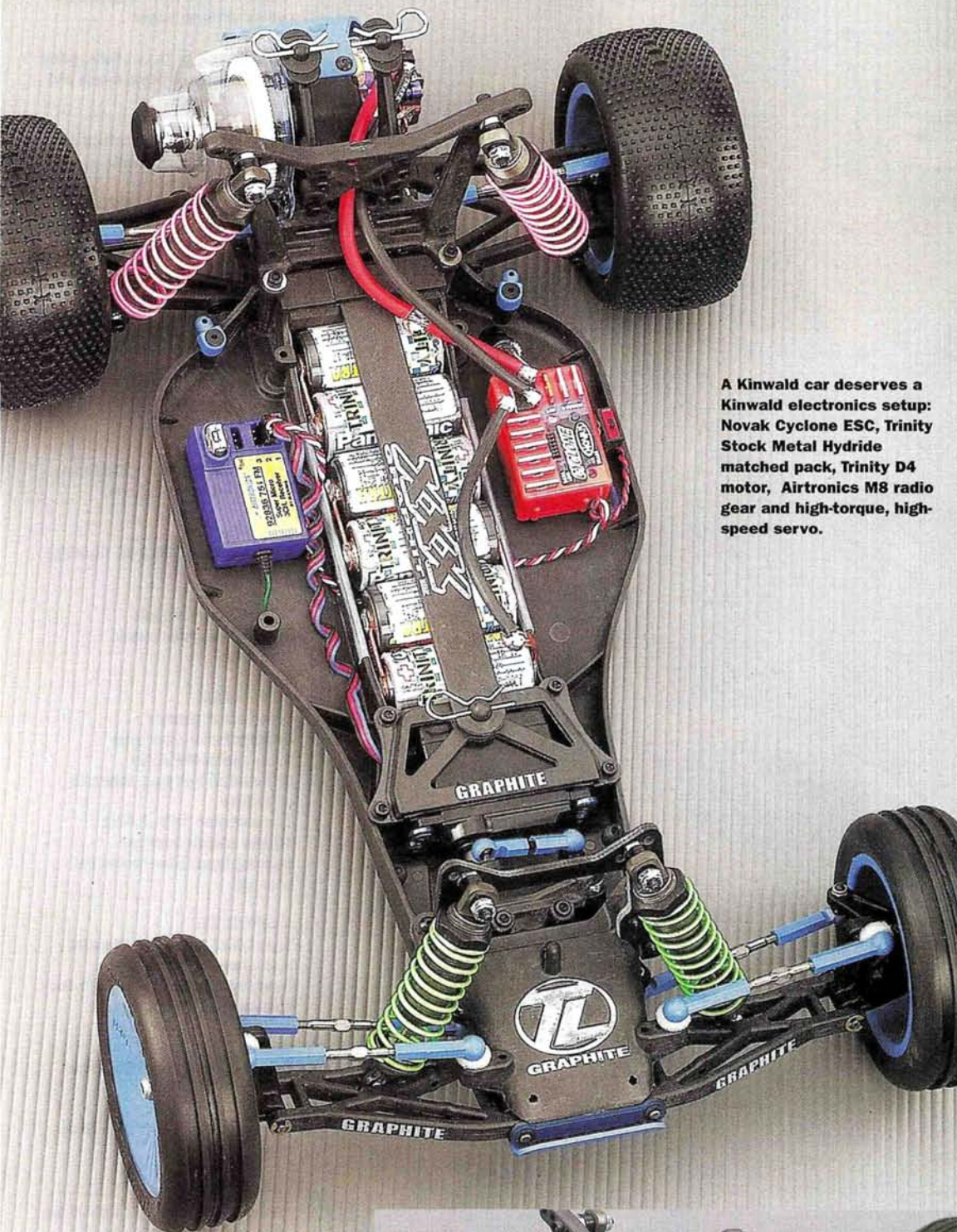
Type (F/R) Team Losi Wide Body ribbed/X-2000

LIKES

- Hello; this is a Triple-X with all the hop-ups. What's not to like?
- Threaded shock bodies are convenient and may be adjusted precisely.
- Externally adjustable ball diff.
- Excellent slipper clutch.

DISLIKES

- Excessive flashing on the shock pistons.
- No blue screws? C'mon, this is a Kinwald car!



A Kinwald car deserves a Kinwald electronics setup: Novak Cyclone ESC, Trinity Stock Metal Hydride matched pack, Trinity D4 motor, Airtronics M8 radio gear and high-torque, high-speed servo.

The blue motor guard and rod ends, as well as the anodized motor plate, set off this Triple-X as a Kinwald car. Note that the motor plate is independent of the bumper to help prevent a rear-end collision from tweaking the plate.

YOU'LL NEED

- Transmitter and receiver
- ESC ■ Steering servo
- 6-cell battery pack ■ Motor
- Pinion gear ■ Tire glue
- Polycarbonate-compatible paint



building & setup tips

The Triple-X is a very quick and simple build, especially if you're used to wrenching on touring cars! The manual is very thorough and well illustrated, and all the parts fit together well. In Kinwald mode, you'll have to flip between the standard and addendum manuals, and there are a few extra items to consider because of the hop-up options.

Preload collar installation. You may find that one or more of the preload collars threads on more tightly than the others. You could grease the shock body, but that will cause dirt to cling to the threads—not good. I simply threaded the tighter collars up and down the shock body to free them up. If that doesn't work for you, try using a “dry” lubricant such as Finish Line Krytech or White Lightning to reduce friction without leaving an oily lubricant film.

Shock tower protection. If you crash frequently (be honest with yourself) and your Triple-X is likely to be upside-down a lot, apply CA to the edges of the graphite front shock tower to help protect it from being chipped or delaminated.

Strip prevention. The Kinwald car's graphite parts are tough, and threading screws into them can be difficult. Use the included tapping screw to pre-thread any holes in graphite parts, and feel free to lube the screws with white grease to help them turn more easily.

Flash trimming. It's critical that the shock pistons fit in the shock bodies precisely; the Kinwald car's pistons didn't. Much flashing had to be removed before they fit without binding. To avoid flat-spotting the pistons, I locked the pistons onto an old shock shaft with jam nuts, then I chucked the shaft in a drill press to spin them while I sanded off the flashing. Then I matched up the piston diameters with a digital caliper to make sure I didn't overcook them.

Radio interference reduction. This one's from Team Losi's website. If you have glitch trouble and suspect the graphite chassis could be the culprit, try this: drill a small hole in the antenna tube about 1/2 inch up from the bottom. Insert the antenna wire into the antenna tube through this hole, and thread it as usual. Now when you plug the antenna tube into the chassis, it won't press the antenna wire against the graphite. Even if your receiver isn't glitching, this is a good preventive measure.

KIT FEATURES

• **Chassis.** Team Losi was the first to recognize the performance potential of molded-plastic chassis back when graphite plate was the material of choice, and the Triple-X chassis represents more than a decade of refinement in molded-chassis tech. The distinctive Coke-bottle shape is designed to make the Triple-X less prone to snagging on track barriers, and raised sides provide greater cornering clearance while minimizing the amount of speed-robbing track contact area in the event of a bottom-out situation. The chassis is stiffened by shallow sills around its perimeter and the walls of the battery tray, and a single upper brace caps the narrow front



So ... I guess the message here is "I'm graphite!" Note the mounting locations for the front shocks; by moving the shocks back on the arms, the Triple-X's center of gravity is lowered.

half of the chassis as it captures the steering servo. Since this is the Kinwald edition, all the parts are molded of graphite/plastic composite.

• **Drive train.** The 3-gear, diff-on-the-bottom transmission design has been a staple of competition buggy and truck design since Associated introduced the Stealth transmission, and the Triple-X makes good use of the proven layout. In Kinwald trim, the transmission is outfitted with a one-piece, hard-coated aluminum top-shaft/top-gear unit. This part is significantly lighter than the standard car's two-piece steel assembly (12.9 grams versus 5.4 grams), and that makes for a quicker accelerating gear train. The other Kinwald bonus in the transmission department is a machined, blue-anodized motor plate, while the rest of the parts are stock

Triple-X items. The stock stuff is trick in its own right: the ball differential uses keyed diff rings to prevent slippage, Teflon-sealed bearings are standard, and the slipper clutch uses a pair of pads for consistent slip action. A plastic motor cage/bumper protects the transmission and the motor, and since the motor plate is independent of the bumper, it is less prone to track damage.

MIP CVD axles complete the drive package and need no introduction. Brian has been endorsing these since they debuted years ago, and they are probably the most popular racing hop-up after titanium turnbuckles.

• **Suspension/steering.** Many of the Triple-X's trademark features are found in the suspension, and the Kinwald Edition concentrates many of its go-fast items here. Let's start with the shocks; the aluminum bodies are hard anodized like the standard car's, but instead of using clamping preload collars, the bodies are threaded for screw-on preload collars. The shock shafts are also special and feature a titanium-nitride coating for reduced stiction and increased wear resistance. The first Kinwald-edition Losi buggy, based on the Double-X platform, used springs that were powder-coated blue for style and not to indicate spring rate. For the new Kinwald car, Team Losi left the springs' standard color-coding intact: green fronts, pink rears.

As you would expect, all the molded suspension parts are constructed of graphite composite, but the standard Triple-X geometry was left unchanged. To cap off the system, the standard car's steel turnbuckles' camber links have been replaced by titanium Lunsford units.

Likewise, Lunsford rods join the steering hubs to the bellcranks, which are angled back on their posts as part of Losi's AGD (advanced geometry design) steering system. The bellcranks' pivot posts match the angles of the front kingpins, and that eliminates bump-steer. Ball bearings are included to keep the 'cranks turning smoothly and effortlessly.

• **Body/wheels/tires.** Team Losi's unique Phobia body and wing replace the standard car's fastback shell, and the kit's dish wheels are now molded in deep blue. Losi rubber is no surprise; Wide Body front tires wrap around the front hoops, and X-2000 treads are in the rear, with foam inserts included for all.



THE KINWALD SETUP

The most important and visible changes the

Kinwald car makes to the Triple-X formula are in the various upgrade parts it includes, but the suspension setup has also been changed. The standard Triple-X includes no. 55 pistons and silver springs (3.2 rate) up front and no. 56 pistons with yellow springs (2.0 rate) in the rear. The BK comes with no. 56 pistons all the way around, and green springs (3.5 rate) up front with pinks (2.3 rate) in the rear.

Spec versus Stock versus Kinwald Triple-X

Now that Losi offers the "Brianmobile," there are three varieties of Triple-X buggy to choose from. What's the difference? Looks like I gotta make you guys a chart ...

	TRIPLE-X DIRT SPEC	TRIPLE-X	TRIPLE-X KINWALD EDITION
Chassis	Stiffezell	Stiffezell	Molded graphite
Shock bodies	Blue anodized	Hard anodized	Hard anodized, threaded
Shock shafts	Chrome steel	Chrome steel	Ti nitride-coated steel
Drive axles	Telescoping universal	Steel universal	MIP CVD
Hub bearings	Metal bushing	Fiber-sealed bearing	Fiber-sealed bearing
Wheels	White dish	White dish	Blue dish
Tires	Dirt Spec blue	Taper Pin	X-2000
Body	Triple-X stock	Triple-X stock	Phobia
Turnbuckles	Steel	Steel	Lunsford titanium
Blue bumper, rod ends, motor cage	Yes	No	Yes
Graphite package	No	No	Yes
Street price	\$160	\$210	\$250

What makes it a Kinwald kit—and does it matter?

Here's what separates a Kinwald car from the stock Triple-X, and some notes on what the parts can—and can't—do for you:

■ **Molded-graphite chassis parts.** The main chassis and brace, battery hold-down, front and rear suspension arms, rear shock tower and pivot plate: graphite-fiber-reinforced plastic composites were pioneered by Team Losi, and the stuff works; graphite parts are stiffer and lighter, which makes for quicker acceleration (less mass to move) and better suspension action (less undamped flexing to diminish the shocks' effectiveness).

■ **Ball-bearing steering.** For years, you probably settled for bushings, but once you experience the silky-smooth steering of bell-cranks with ball bearings, you'll never go back. Can you win without them? Sure. Will you be sorry you got them? No way.

■ **Blue-anodized-aluminum front axles, pin brace and machined motor plate.** This stuff is just for show. That doesn't mean we don't dig it, it just means it won't affect your lap time.

■ **MIP CVD drive shafts.** The stock Triple-X's steel universals won't hold you back, but CVDs are too sweet for most racers to pass up. The big benefit is superior precision for zero backlash and complete rebuildability that lets you maintain that precision.

■ **Titanium turnbuckles.** Stronger, lighter, better. Ti turnbuckles are hop-up number one for most off-road racers.

■ **Threaded, hard-anodized shock bodies.** Another one of those "don't need it, but once you have it, can't live without it" type of deals. The standard Triple-X's stock Hard Body shocks and sliding preload collars are fine, but the threaded bodies make it easy to set preload with total precision. If one spring is slightly more or less loaded due to the weight of the electronics on the chassis or a slight difference in spring length, you can dial the preload in or out to compensate with greater ease than with the sliding collars and with more precision than with clip-on spacers.

■ **Titanium nitride shock shafts.** You'll probably never notice the slippery shock shafts doing anything for you, until you realize how long your shocks stay smooth between rebuilds and that the shafts don't scuff. Not sexy, but practical.

■ **Hard-anodized, machined-aluminum slipper shaft/top gear.** Invisible, but important—especially in stock class. This piece trims rotating weight from the tranny, which is exactly where you want to save weight. The aluminum shaft will make the most of your motor by allowing the tranny to spool up more quickly.

■ **Phobia body and wing set.** Style, baby. We can't say whether it affects performance until our wind tunnel is online, but who cares?

■ **Aluminum hinge-pin brace.** We're gonna call this a style piece. The plastic stocker has never let us down.

■ **"Cool Blue" molded front bumper, body mounts and motor guard, rod ends and wheels.** Strictly style and totally cool, or incredibly lame, depending on whom you ask.



Performance *by Derek Buono*

OK Pete; let me get this straight: you plan to write the entire Triple-X Kinwald Edition ("KE" for short) article, but you need me to go out and test it so you can stay in the office and pound the keyboard? Well, if I have to, I have to!

I tested the KE at Long Island Raceway, NY; it has a medium-traction, hard-packed surface. Since the KE uses the well-tested standard Triple-X suspension geometry, I didn't expect it to handle very differently from the stock X car. I was correct; I found the KE easy to drive around the track, and in stock form, it displayed a mild push. This required that I use heavy brakes to get it around the track with any speed. It did, however, jump very well, and over the doubles, landings were feather-soft when I overshot the landing.

Off-power steering was acceptable, but it seemed short of on-power steering; it didn't help that the Trinity D4 10-double motor was too much for the winding track and its many 180-degree turns. After I had changed to a lighter shock oil and larger rear pistons to decrease damping, the KE felt better to me. With this more active suspension, the KE seemed to dig into the corners better, and both on- and off-power steering improved. After I had made these changes, the KE landed a little harder off the bigger jumps, but it didn't lose its composure when it bottomed out.

The other Triple-Xs on the track displayed a wide variety of stiffer and softer setups that also seemed to work well. This tells me that the Triple-X (and, by extension, the KE) is not a finicky "magic setup" car that requires very specific and unique settings to work on a given track.

As you'd expect of a car that adds graphite components and titanium turnbuckles to a design that has already proved durable, the KE shrugged off the inevitable off-road racing tumbles. I did, however, have to pit when the thrust bearing detonated and left me with the options of post-traction or no rear drive at all. When I had replaced the bearing, the KE was back to its reliable self.

THE VERDICT

The Triple-X debuted to rave reviews and went on to become the "Readers' Choice" favorite buggy for 2000, and now Losi offers a fully hopped-up version with Kinwald cred. Who wouldn't like this car? It has everything you could want for performance and tuning convenience, saves you a substantial wad of cash compared to laying out for a standard kit plus the hop-up parts, and on top of that, the kit practically assembles itself and drives as if it's on autopilot. You'll pay a little more, but you get a lot more. ■

SOURCE GUIDE

AIRTRONICS
1185 Stanford Ct., Anaheim, CA
92805; (714) 978-1895;
www.airtronics.net

HORIZON HOBBY
4105 Fieldstone Rd., Champaign,
IL 61821; (217) 355-9511;
www.horizonhobby.com

LUNSFORD RACING
2500 Three Lakes Rd., Ste. A,
Albany, OR 97321;
(541) 928-0587;
www.lunsfordracing.com

MIP
830 W. Golden Grove Way,
Covina, CA 91722;
www.miponline.com

NOVAK ELECTRONICS INC.
18910 Teller Ave., Irvine, CA
92612; (949) 833-8873;
www.teamnovak.com

TEAM LOSI
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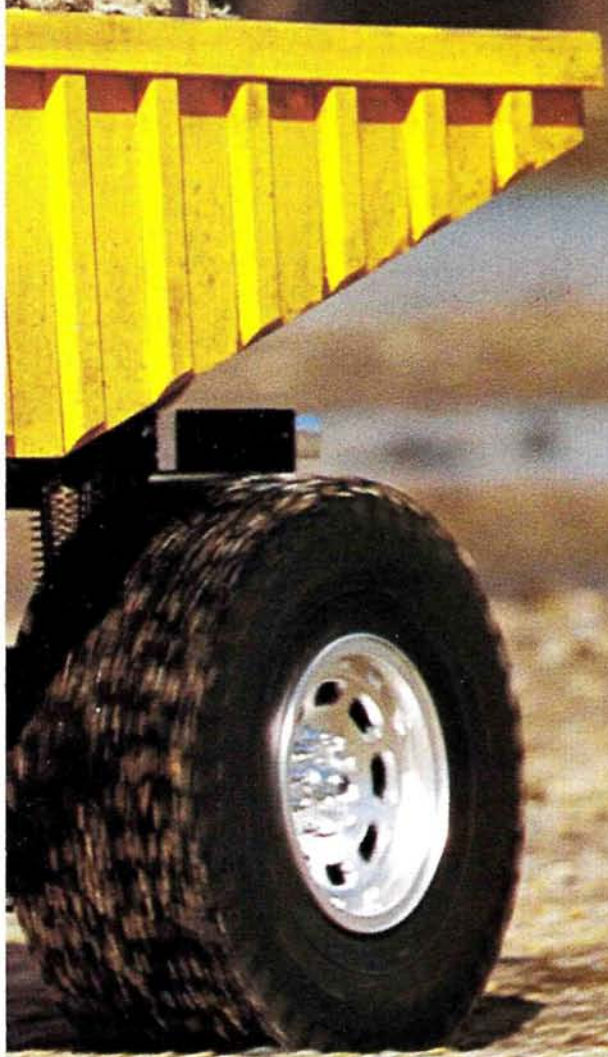
TRINITY PRODUCTS INC.
36 Meridian Rd., Edison, NJ
08820; (732) 635-1600;
www.teamtrinity.com

**TRACK
TEST**
1/20-SCALE ELECTRIC

Tamiya Mammoth

Take a load off! by Kevin Hetmanski





There is no doubt that Tamiya is the king of scale RC, with amazingly realistic renditions of such diverse vehicles as 18-wheel haulers and delivery trucks, battle-ready WW II armored tanks (with functional, infrared-shell-firing weapons) and this latest entry—the Mammoth. The Mammoth is an artfully molded model of the three-story-high, land-going leviathans that haul massive amounts of earth and rock out of industrial excavation sites, and it is as detailed as any Tamiya static kit. While the profile of the Mammoth is stunningly new, the hardware underneath is familiar stuff, especially to truck fans. The Juggernaut 2 chassis is the heart of the Mammoth, with some special mods that make it a Mammoth. See for yourself.

DATA CENTER

VEHICLE TYPE 1/20-scale 4WD electric dump truck

BEST BUYER Monster truck fans, construction workers; anyone who never outgrew his Tonka trucks

KIT RATINGS (poor, satisfactory, good, very good, excellent)

Instructions Excellent

Parts fit/finish Very good

Durability Very good chassis; satisfactory body parts

Overall performance Very good for a big dump truck

SPECIFICATIONS

SCALE 1/20

STREET PRICE \$469.99

DIMENSIONS

Wheelbase 11.02 in. (280mm)

Width 11.3125 in. (277mm)

WEIGHT

Total, as tested 204 oz. (5,783g)

CHASSIS

Type Ladder

Material Aluminum/ABS plastic

DRIVE TRAIN

Type Shaft

Primary Pinion/spur

Drive shafts Telescoping universal joint

Differential(s) Metal bevel gear

Bearing type Combination of bearings and bushings

SUSPENSION (F/R)

Type Solid axle/leaf-spring/coil-over

Damping None

WHEELS

Type One-piece chrome-plated plastic

Dimensions (DxW) 2.875x2.3125X in. (70x57mm)

TIRES

Type Rubber block tread

ELECTRONICS

Motors Mabuchi 540

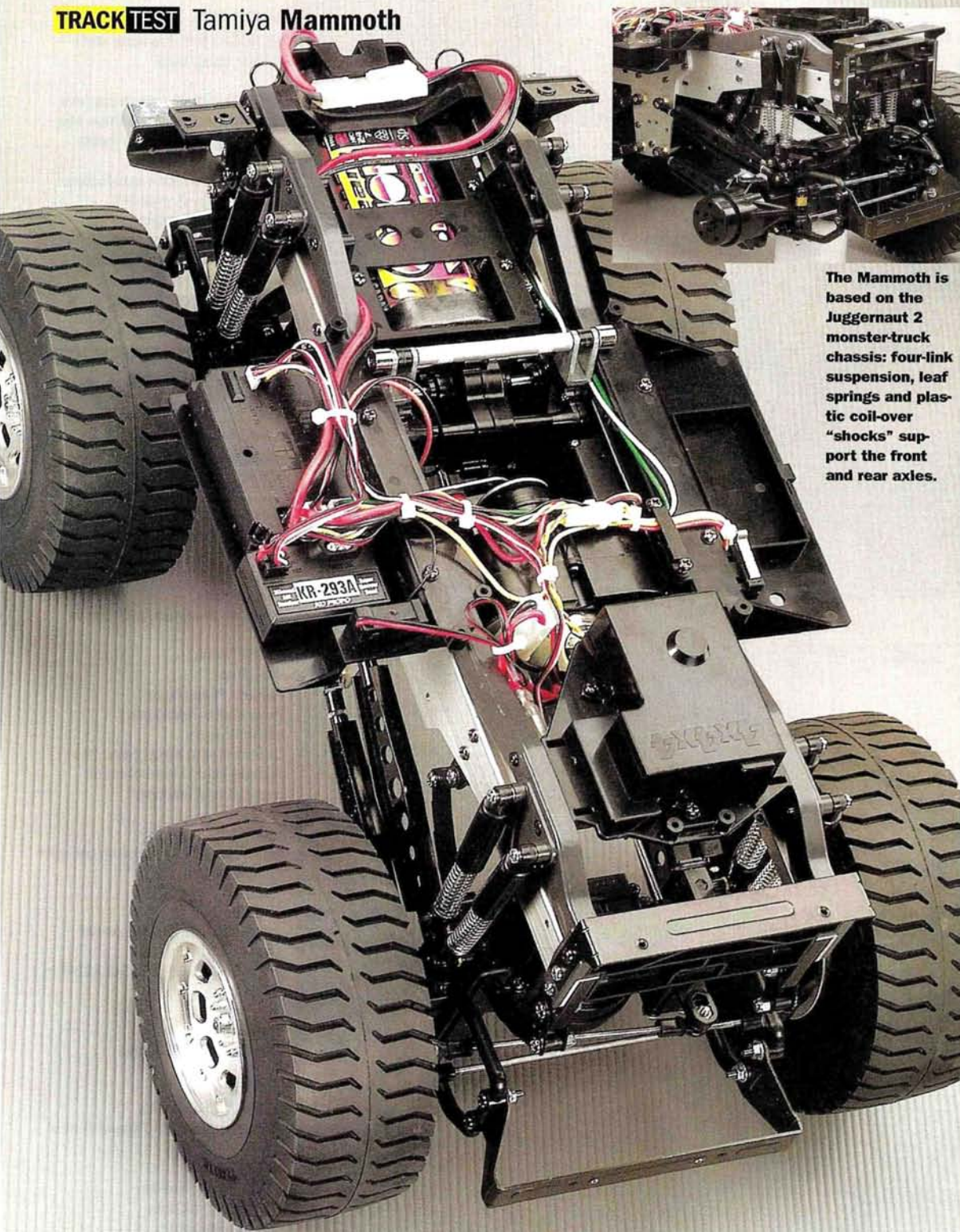
Speed control MTSC speed control

LIKES

- Super scale realism.
- Functional tilt bed.
- Rugged design.

DISLIKES

- Bed can't be manually operated.
- Slow top speed.
- "Plus 1ch Unit" not compatible with all radios.



The Mammoth is based on the Juggernaut 2 monster-truck chassis: four-link suspension, leaf springs and plastic coil-over "shocks" support the front and rear axles.

building & setup tips

As always, Tamiya's instructions are topnotch: very clear and easy to understand. Here are a few tips that will make your life easier when building your Mammoth.

To glue or not to glue? The tires are left unglued to protect the truck's drive train, instead of using a slipper clutch. I decided to remove the tires from the rims, clean the mating surfaces and glue the tires to the rims to give my Mammoth better climbing capabilities. If you are not the best at gluing tires and want them to remain clean, don't glue them.

Watch the windows. Carefully install the window in the driver compartment; press and apply even pressure. I cracked the side of the window when I pressed it into my truck.

Install ball bearings when you build. If you plan to install ball bearings in the future, do yourself a favor, and install them while you build, not later—unless, of course, you enjoyed building the truck so much that you want to do it again to install bearings. Your call.

YOU'LL NEED

- 2-channel radio and receiver
- Steering and throttle servos
- 6-cell battery pack
- Charger

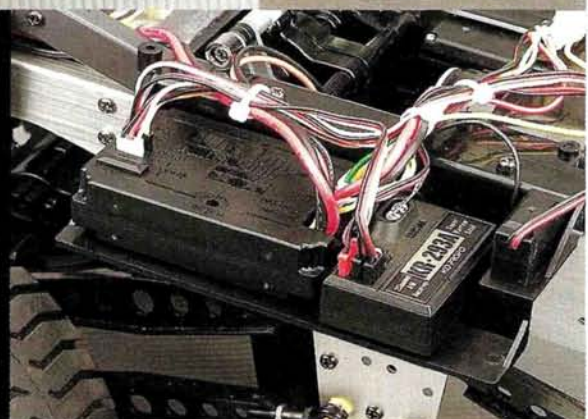
FACTORY OPTIONS

- RC light-bulb set—53370
- Brake-light set—53114
- Monster-truck aluminum damper set—53369
- Monster-truck aluminum suspension-arm set—53383



Left: the Tamiya MTSC unit controls the movement of the Mammoth. It is servo-actuated but acts like a fully proportional ESC. A large plastic cover (not shown) protects it from the elements.

Right: the radio has plenty of space to fit the electronic gear. The "Plus 1ch Unit" controls the up and down movement of the dump bed. Turn the steering in one direction, and the bed is raised; turn it in the other direction and it will be lowered.



KIT FEATURES

- **Chassis.** The Mammoth's main chassis is made of rugged aluminum plate. It is supported at both ends by large plastic bulkheads, while the transmission supports the middle of the chassis and keeps the aluminum from flexing. Plastic rails on top of the chassis are used to mount the shocks, radio tray and body. The battery is in the rear of the truck between the rear bulkhead and radio tray. The radio tray is attached to the upper plastic rails with screws.

- **Drive train.** Most of the drive train is taken directly from the Juggernaut 2, but the main gearbox was changed slightly. The Mammoth uses only one stock motor to drive the wheels instead of two, and Tamiya raised the gear ratio by adding an extra gear to the gearbox so that it can carry heavy loads without putting a strain on the motor. The plastic gears in the gearbox spin on metal shafts that are supported by bronze bushings. The gear shafts have small metal heat sinks attached to their ends to dissipate any heat caused by friction between the shafts and the bushings. Metal drive shafts with universals transfer the motor's power from the gearbox to the front and rear axles. Inside the axles are full sets of metal gears. Large bevel gears spin a countergear, which in turn spins a large gear differential. The differential is connected to the outer hubs by long dogbone drive shafts.

- **Suspension and steering.** The truck's suspension is a four-link design. Four girder-like plastic arms with ball cups attach each axle to the chassis and pivot on large-diameter pivot balls. Realistic leaf springs attached to the axle with small shackles keep the axles centered under the chassis. Each axle is further supported by four coil-over "shocks." Since the leaf springs hold the weight of the truck and the coil-overs aren't damped, the shocks are more for looks than function.

The steering servo is mounted between the chassis rails on one of the aluminum lower supports and, unlike in the Juggernaut 2, it steers the front wheels only. A long metal rod runs from the servo to the front axle, which is equipped with a spring-loaded servo-saver. Two mounting positions are available on the top and lower arm. A small link runs from the servo-saver to the right wheel, and a longer link runs from the right to the left wheel. The rear axle has the same steering hubs as the front. Tamiya includes a molded-plastic lockout to keep the rear wheels pointing straight forward at all times.

- **Included electronics.** The speed control is very different from what we are used to seeing in Tamiya vehicles—usually a 3-step speed control with a large ceramic resistor for the slower speeds. The Mammoth uses a servo-actuated, FET-equipped electronic unit called an MTSC. (The manual does not spell out the acronym, but my guess is that it stands for "monster truck speed control"). The MTSC uses a lever arm to turn a potentiometer on a circuit board. This is done next to the ESC. Other than that, it works just like a regular ESC, with fully proportional forward and reverse and neutral, but no brake. A large plastic cover protects the MTSC and the servo.

The "Plus 1ch Unit" is another included electronic component; it operates the bed-lift mechanism. For detailed info, see the "Dumps like a truck" sidebar below.

- **Body, wheels and tires.** The Mammoth body comes in a few pieces that must be assembled before it's mounted on the chassis. The body parts are made of ABS plastic and come molded in yellow, so it is very easy to replicate the box art. I gave my truck a quick coat of Testor's Team Licensed Racing Colors no. 4 Kodak Film Racing Yellow paint to jazz up the

KO Propo EX5 Master AM radio

The Master 2-channel radio has many helpful functions such as throttle/steering trim, endpoint adjustment, 2-model memory and steering dual rate. The small LCD screen displays settings of each function as it is adjusted.

KO Propo PS-401 throttle servo

The PS-401 is KO's "standard" servo included with the EX5 Master radio. Its only task is to move a nearly frictionless arm on the speed control, so needless to say, it proved more than capable.

Hitec 615MG steering servo

The Mammoth puts a lot of weight over the front wheels, and I felt that a high-powered servo would best steer this big truck. This servo's claimed output is 132 oz.-in. of torque and a speed of 0.17 second at 6 volts. The metal gears inside make the 615MG nearly indestructible.

Team Orion V-Max battery

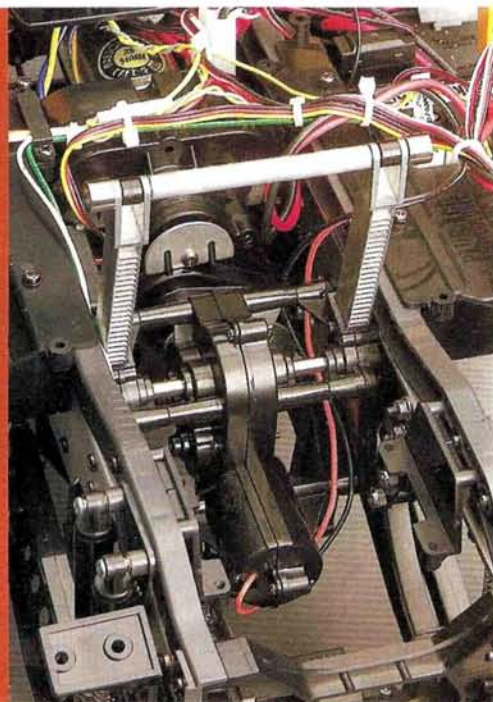
Orion's matched 2400mAh stick pack provides my Mammoth with long run times and is really a much more exotic pack than it requires. But more run time is more fun time, so why skimp?

Dumps like a truck

A unique feature of the Mammoth is its active tilting bed. To operate the bed, a motorized lifting rack is mounted between the frame rails just behind the gearbox. The rack unit has a compact gearbox with two output shafts to move the toothed rack arms up and down. It is basically like the rack-and-pinion system used on full-size cars. The rack unit gearbox has a high gear ratio that allows it to lift an impressive 8 pounds! Two microswitches are mounted on the truck—one in the middle and one in the rear of the chassis. The middle switch stops the rack unit when the bed is in the lowered position; the other stops the rack unit when the bed is up. The rack unit is fixed and can't pivot; instead the rack arms ride in plastic rails that are mounted on the bed.

Ordinarily, a 3-channel radio would be required to work the bed, but thanks to the Mammoth's "Plus 1ch Unit," a standard 2-channel radio can perform all three of the Mammoth's functions: forward and reverse throttle, left and right steering and bed tilt up and down. The Plus 1ch Unit plugs into the receiver's steering and throttle channels, and the throttle and steering servos plug into the Plus 1ch Unit. On the other side of the unit is a plug that's connected to the battery input of the MTSC. Another plug is connected to the main battery. Once hooked up, the "Plus" system doesn't actually add a channel, but it cleverly allows the steering channel to operate the dump bed. When the steering wheel is turned to full lock in one direction (left or right, depending on your radio) while the Mammoth is stopped, the front wheels will turn with the wheel input but then return to neutral as the Plus 1ch Unit raises the dump bed. You can hold the bed at any position by returning the steering wheel to neutral; turn the wheel in the opposite direction and the bed is lowered. If you hit the throttle while the bed is in motion, the power to the bed is cut, the throttle is activated, and normal steering control returns.

Here is the lift mechanism for the dump bed. Its high gear ratio allows it to lift an impressive 8 pounds! Two microswitches at the chassis' center and rear stop the bed at full up and full down positions.



TRACK TEST Tamiya Mammoth

plastic a bit, and then I wiped it down with a thinned-out water-based brown paint for a realistic muddy look. The body is very detailed; among its features are a huge grill, stairs going up the sides, railings and light housings. The top of the cab is mounted on the chassis with screws; the lower bumper supports the cab's bottom. The Mammoth's wheels are made of plastic and have a satin chrome finish. The tires are 5.98 inches in diameter (152mm) and look like the tires found on a real earthmover monster truck.

PERFORMANCE

I had the Mammoth finished and ready for its test run in just a couple of hours. It has only one motor and is geared much higher than a Juggernaut, so it isn't a fast truck (8mph, to be exact); but it does launch hard, and the super-high gearing allows it to power over just about anything. The Jugg's stiff suspension is as bouncy as ever when the bed is empty, but 8 pounds of dirt softens the ride up nicely. I carted the stuff around the front yard, then brought the truck to a stop and turned the steering wheel full lock to the right, and the bed began to rise. Once it was in the fully upright position and all the dirt had been dumped, I turned the wheel to the left, and the bed was lowered—too cool! Then I tried to raise it again, and it didn't budge—not too cool. Nothing was jammed, and the front wheels turned but did not return to neutral as they do when the dump bed activates; the truck just sat there. Then it worked fine for a while. I swapped out the radio gear and used an FM radio. The bed worked a little more consistently, but I still had occasional problems, even after I had adjusted the pot on the Tamiya electronic gear. I then switched to my Airtronics M8 FM radio, and the dump bed worked every time. It seems that the Plus 1ch Unit is not compatible with all radio systems—an annoyance

I later found to be confirmed by the small print in the manual.

VERDICT

The Mammoth is very well detailed—the ultimate sandbox toy. Now Tamiya needs to make a 1/20-scale bulldozer! It is not for speed freaks or for smash-and-bash use (the plastic body won't take it), but as an example of the fine art of molding and first-class industrial design, the Mammoth is a mammoth success! The dump-bed electronics are less stunning. They will glitch sporadically with certain radios (I hope Tamiya will identify them with a list), and this can be frustrating (especially when you're trying to impress someone: "OK; now it's gonna dump. Right now. Now. And ... now. OK; now"). Fix that one thing, and the Mammoth is the coolest 1/20-scale mega dump truck ever. Yes, it's the only 1/20-scale mega dump truck ever, but it's still pretty darn trick! ■

SOURCE GUIDE

AIRTRONICS
1185 Stanford Ct., Anaheim, CA
92805; (714) 978-1895;
www.airtronics.net

KO PROPO USA INC.
16012 South Western Ave., Ste.
308, Gardena, CA 90247; (310)
532-9355; info@kopropo.com;
www.kopropo.co.uk

HITEC RCD INC.
12115 Paine St., Poway, CA
92064; (858) 748-6948;
www.hitecrco.com

MABUCHI MOTOR AMERICA CORP.
475 Park Ave. S., 34th floor, New
York, NY 10016; (212) 686-3622.

TAMIYA AMERICA INC.
2 Orion, Aliso Viejo, CA 92656-
4200; (800) TAMIYA-A; fax (949)
362-2250; www.tamiya.com.

TEAM ORION INC.
22601 La Palma, Ste. 103, Yorba
Linda, CA 92877; (714) 694-2812;
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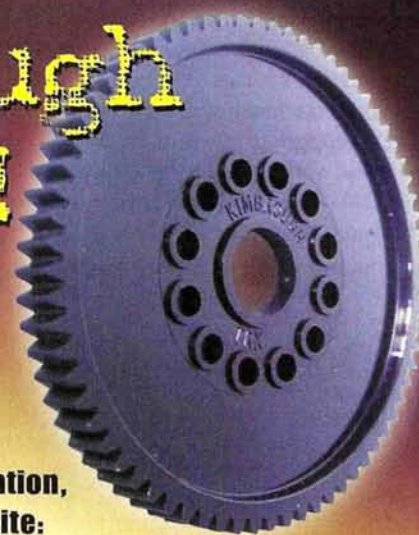
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2WD Electric *Race Truck*

TEAM LOSI TRIPLE-XT

ASSOCIATED T3

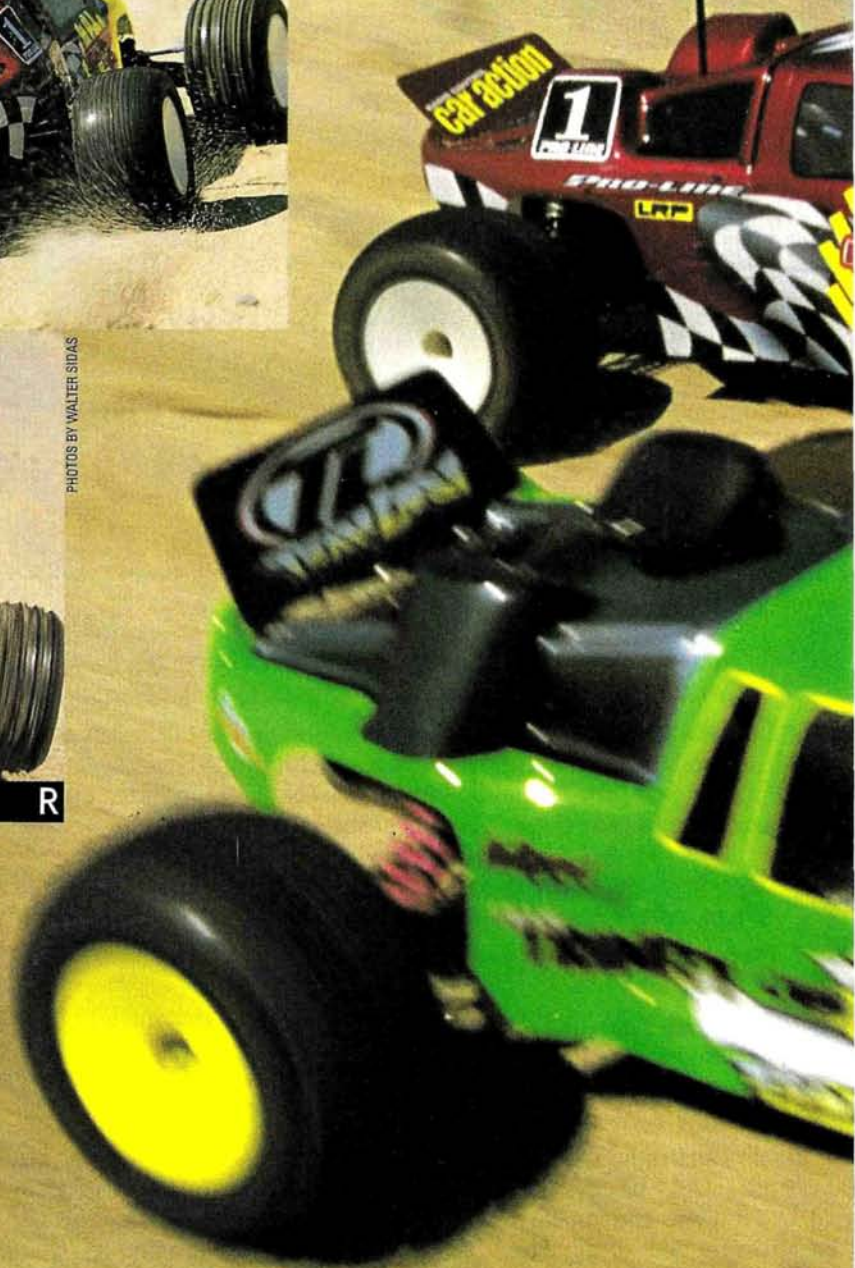


PHOTOS BY WALTER SIDA'S

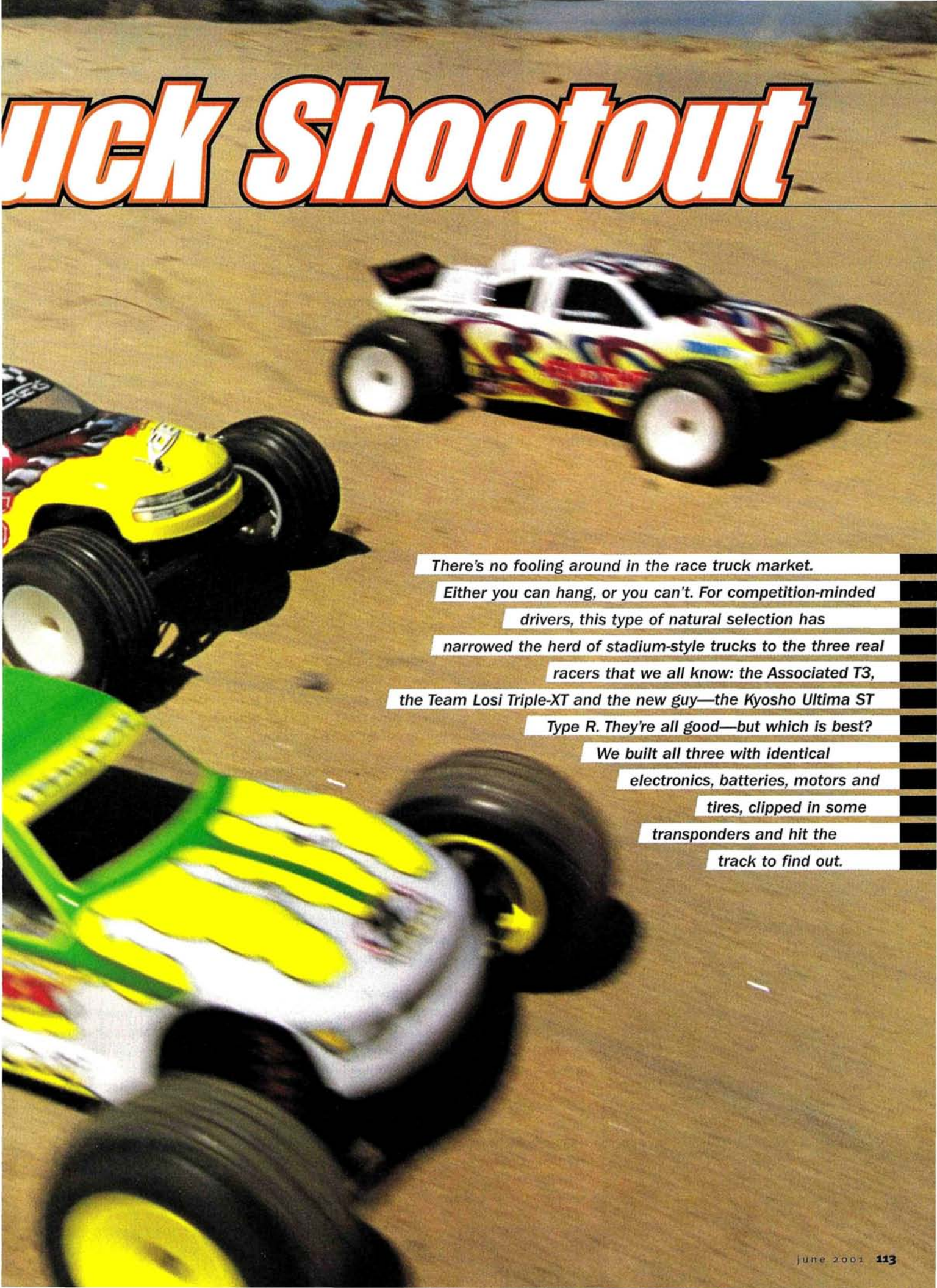
KYOSHO ULTIMA ST TYPE R

*We test
to find
the best*

by the staff of RC Car Action



uck Shootout



There's no fooling around in the race truck market.

Either you can hang, or you can't. For competition-minded drivers, this type of natural selection has narrowed the herd of stadium-style trucks to the three real racers that we all know: the Associated T3, the Team Losi Triple-Xt and the new guy—the Kyosho Ultima ST Type R. They're all good—but which is best?

We built all three with identical electronics, batteries, motors and tires, clipped in some transponders and hit the track to find out.

2WD Electric Race Truck Shootout

tech specs

	ASSOCIATED FACTORY TEAM T3	KYOSHO ULTIMA ST TYPE R	TEAM LOSI TRIPLE-X
Wheelbase	289mm	285mm	290mm
Weight	1,715g	1,822g	1,808g
Width	316mm	320mm	329mm
Chassis material	Molded graphite	Plastic	Fiber-reinforced plastic
Transmission ratio	2.4:1	2.5:1	2.43:1
Drive shafts	MIP CVD	Steel universal	Steel universal
Differential	Ball	Ball	Ball
Slipper clutch	Single disc	Single-disc	Dual disc
Bearing type	Teflon-sealed	Metal-shielded	Fiber-sealed
Shock bodies	Hard-anodized, Teflon-coated aluminum	Hard-anodized, Teflon-coated aluminum	Hard-anodized aluminum
Turnbuckles	Titanium	Steel	Steel
Included front tires	Pro-Line Edge	Pro-Line Edge	Team Losi Radius Rib
Included rear tires	Pro-Line Bow Tie T	Pro-Line Bow Tie T	Team Losi Taper Pin
Street price	\$240	\$200	\$209

adjustment options

	ASSOCIATED FACTORY TEAM T3	KYOSHO ULTIMA ST TYPE R	TEAM LOSI TRIPLE-X
Upper shock position (F/R)	2/3	3/3	4/4
Lower shock position (F/R)	3/1	3/2	3/3
Inside camber position (F/R)	2/3	3/6	3/3
Outside camber position (F/R)	1/2	1/2	3/2
Ackerman position (crank/hub)	2/1	1/2	2/1

How We Tested the Trucks

The track. Long Island Raceway hosted the shootout and provided the lap-counting hardware. We tested on fresh dirt, which was moist but hard packed. The layout was fairly tight, with some tough-to-time doubles, a mid-corner table-top, a single-double rhythm section and a long back straight.

Gearing. All three trucks were geared with a final drive ratio of 12.6:1, or as close to it as possible. Each truck required a slightly different pinion and spur setup to deliver the final drive ratio due to different transmission ratios.

Suspension. We tested each truck with the manual-suggested suspension setup just to see how well the out-of-the-box settings worked, but we allowed adjustments if a truck felt like it was way off. Any suspension geometry changes that could be made with stock parts and available shock- and camber-link mounting points were allowed.

Lap times. We used Long Island Raceway's AMB counting system to record lap times. Any laps that required marshaling or were slowed by factors not related to the performance of the vehicle were not considered.

Test Gear

TRINITY STOCK METAL HYDRIDE PACKS

Don't be fooled by the name; for high-voltage, high-capacity racing, the Stock Metal Hydride cells are a good match for stock or modified power. Trinity zaps the cells for minimum internal resistance, gives them the voltage increasing system (VIS) treatment, then matches them for maximum performance.

TRINITY SPEEDWORKS RETRO SERIES PURE GOLD MOTORS

The Pure Gold is Trinity's 12-double motor and is retro in name only. Modern features include low-resistance copper endbell hardware, surface-mount capacitors and dual-gauge High Variance Split (HVS) winds.

LRP IPC V7.1 ESCS & PHAZER RECEIVERS

The V7.1 carries on in the tradition of the V6 with its plug-in chip system for throttle curve and current limiter setting, adjustable drag brake and metallic blue finish. We ran our V7.1s without chips for maximum punch; we wanted to work the trucks hard, and if traction control was going to be an issue, we figured it would be a good test for the slipper clutches. We also ran Phazer receivers because, well, they matched.

HITEC HS5645MG DIGITAL SERVOS

These are Hitec's newest competition servos, and they're pretty trick. The hybrid metal/plastic gear train is claimed to be unbreakable, and a machined aluminum output horn is included (sadly, we couldn't use the Hitec horns, since each truck required a specialized kit piece). Of course, the high-frequency digital servo motor control is the best feature; it delivers precise centering and won't-budge holding power. Hitec claims 106.9 oz.-in. at 4.8 volts, with a transit time of 0.23 second.

PRO-LINE EDGE FRONT & HOLESOT T REAR TIRES

We photographed the trucks with their stock rubber, but we switched them over to Pro-Line tires for testing so that we'd be sure that the differences in lap times revealed the differences in the chassis' capabilities, not the tires'.

ASSOCIATED FACTORY TEAM T3

As the "T3" designation suggests, the RC10T3 is Associated's third-generation racing truck, following the aluminum-chassis "T" and "T2" models. In the spirit of reviewing each manufacturer's best racing machine, we tested the Factory Team T3, which includes a full graphite component package as well as titanium turnbuckles, a blue screw kit and other parts from Associated's Factory Team line. Basic and Team editions are also available with less exotic specs, but all T3s share their molded parts and the legendary Stealth transmission.



AT A GLANCE

Street price: \$240
Wheelbase: 11.38 in. (289mm)
Width: 12.4 in. (316mm)
Weight, as tested: 60.5 oz. (1,715g)
Fastest lap: 23.3 sec.

FEATURES

- Unobtainium-coated shock shafts for increased wear, reduced stiction.
- Hard-anodized shock bodies with Teflon-coated bores and Teflon pistons.
- Molded graphite components, including long-wheelbase chassis, front and rear shock towers, front and rear suspension arms, battery hold-down, front top plate and rear transmission brace.
- "Factory Blue" anodized nose and tail plates, motor-mounting plate, titanium turnbuckles and aluminum screws.
- Full sealed bearing set, including steering bellcranks.
- MIP CVD drive shafts.
- Pro-Line Chevy Silverado body.
- 2.4:1 transmission with large-diameter, single-pad slipper clutch.
- Modular construction allows front suspension, rear suspension with transmission, or transmission only to be detached from chassis intact.

BONUS

- Fully loaded; graphite, CVDs, blue screw kit, Pro-Line body.
- Very little slop in suspension parts.
- Best differential action.
- Spur gear can be changed without altering slipper setting.

BOGUS

- Diff is not externally adjustable without disassembly.
- Servo-saver tension adjustment is inaccessible.
- Least adjustable in terms of shock- and camber-link locations.

PERFORMANCE

CORNERING

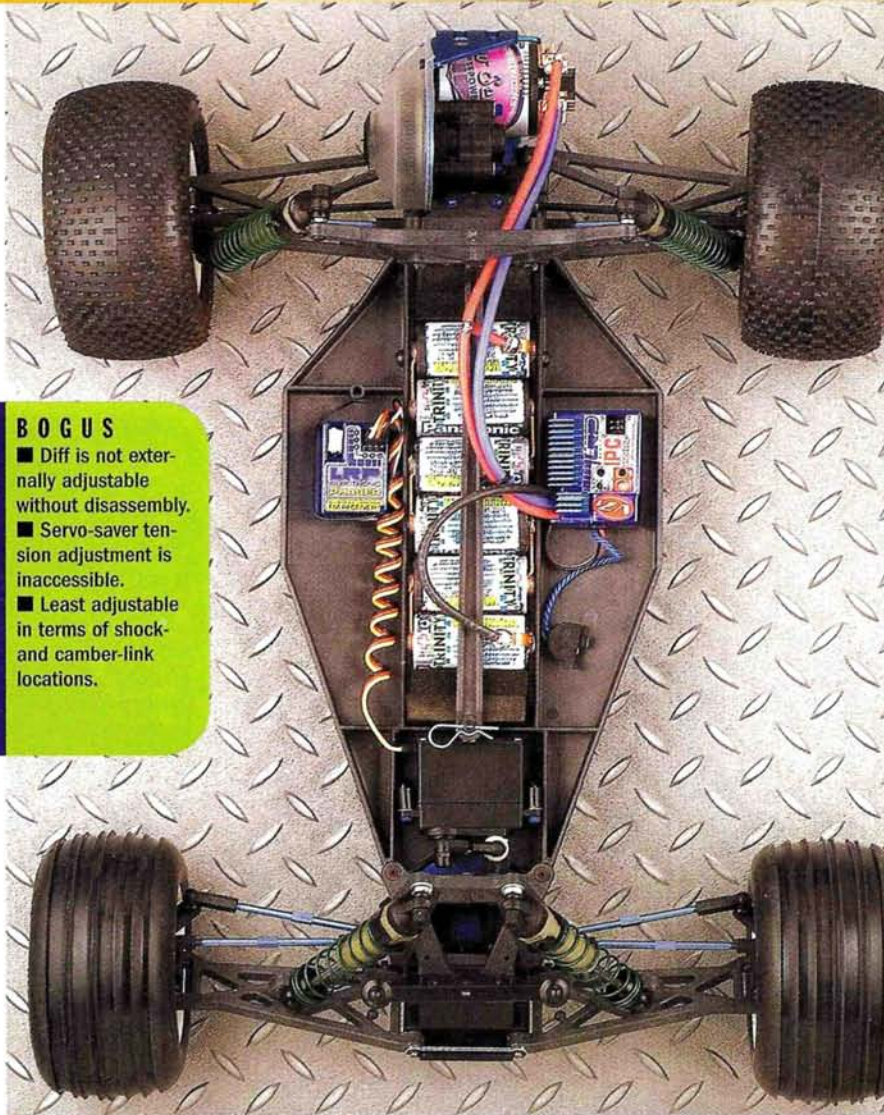
The T3 had excellent on- and off-power steering, probably the best in the bunch, but was very touchy when braking and could be a handful to slide through turns.

JUMPING

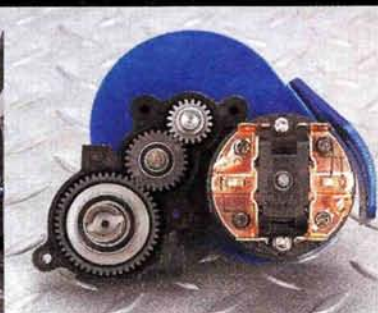
The T3 took off level but was easiest to control if the throttle was chopped in midair to bring the nose down first, which let the rear wheels touch down more gently. This made it easier to get back on power without breaking the rear wheels loose.

ACCELERATION

The T3 blasted from corner to corner with a locked-in feel, but it felt skittish at higher speeds on the back straight. It was easy to over-control the truck and get into a fishtail situation. Although all the trucks had the same final ratio, the T3 felt the fastest out of the hole; credit that to the graphite parts, which help make the Factory Team T3 the lightest truck tested.



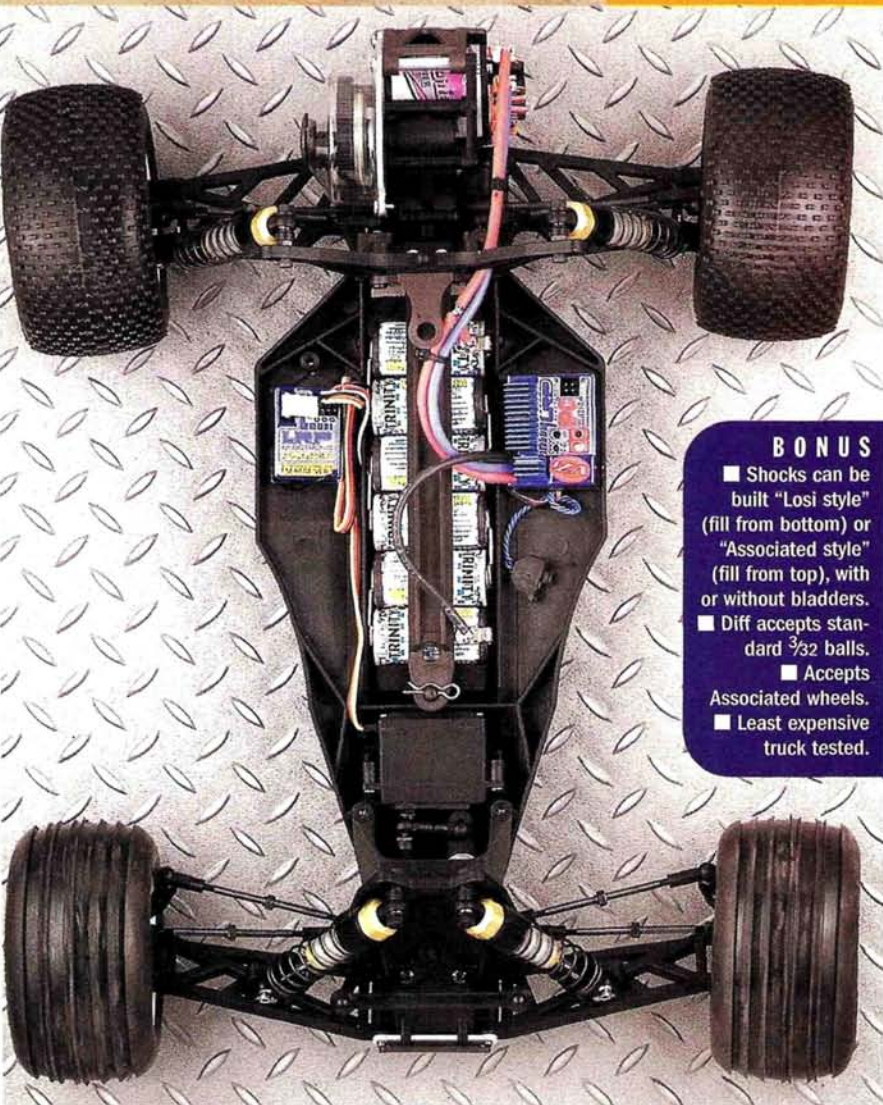
Above: the T3 offers the easiest access to electronics, thanks to the fully exposed steering servo, and it appears to have less "sweep" in its front arms than the other trucks. Below (left to right): MIP CVDs are standard on the Factory Team kit; other versions include steel universals (Team) or dogbones (Basic). Combined kingpin/ballstuds are held past the ends of the suspension arms by compact hub carriers. The hard-anodized Team shocks are as smooth as ever. Associated's slipper clutch allows the spur gear to be changed without altering the clutch setting. The blue-anodized motor plate is standard. The Stealth transmission popularized the 3-gear, diff-on-the-bottom layout that is standard in electric off-road racing vehicles today. Many racers think the Stealth diff is the smoothest in RC.





KYOSHO ULTIMA ST TYPE R

Instead of an alphabet soup appellation, the Ultima has the distinction of being the only race truck with an actual name, and it's a storied one; the original Ultima buggy was an IFMAR 2WD World Champion in 1988 in the hands of none other than Joel Johnson. The late '80s Ultima spawned the Outlaw Ultima truck, but it shares nothing but its name with the modern Ultima ST Type R, which is a fully modern racing machine. The new Ultima has all the competition features a racer needs, with up-to-date suspension geometry and sensible racing spec.



AT A GLANCE

Street price: \$200
Wheelbase: 11.2 in. (285mm)
Width: 12.6 in. (320mm)
Weight, as tested: 64.3 oz. (1,822g)
Fastest lap: 23.8 sec.

FEATURES

- "Dual Cap" shocks can be built with or without bladders and filled from the top or bottom.
- Aluminum shock bodies with Teflon-coated bores and Teflon pistons.
- 3-gear transmission with 12-ball differential and single-disc slipper clutch.

BOGUS

- Kit does not include shock fluid or even recommend which viscosity to use.
- Excessive play in suspension parts.

- Includes Pro-Line Edge and Bow Tie tires and Pro-Line Velocity rims.
- Universal-joint drive axles accept Associated T3-style rims.
- Hinged battery brace.
- Modular construction allows front suspension, rear suspension with transmission, or transmission only to be detached from chassis intact.

BONUS

- Shocks can be built "Losi style" (fill from bottom) or "Associated style" (fill from top), with or without bladders.
- Diff accepts standard $\frac{3}{32}$ balls.
- Accepts Associated wheels.
- Least expensive truck tested.

PERFORMANCE CORNERING

We set up the Ultima with damping appropriate for the stock springs and found the truck to be very pushy. Mounting the battery in the full-forward position and standing up the front shocks helped, but it still took a steady trigger finger to keep the front wheels hooked up. The Ultima turned in some fast laps, but it was hard to crank out consistent laps.

JUMPING

The Ultima took to the jumps with ease and tended to launch with its nose slightly high. Attitude correction via throttle was no problem, and the suspension absorbed landing impacts predictably.

ACCELERATION

The Kyosho was in the middle of the pack in acceleration. It felt stable down the straights and short chutes but didn't have the aggressive feel of the T3. It felt as if the tranny was taking longer to spool up than the other trucks' trannies when accelerating out of the slowest sections.

Above: stylistic comparisons with the T3 are inevitable, but the Ultima is a unique truck in its own right. The built-in transponder mount (attached to the rear shock tower) and the hinged battery brace are features all race trucks should have. Below (left to right): the Ultima's compact steel universals perform well with little slop, and we like the top-mounted camber link. The "Dual Cap" shocks are very well-made and versatile, but Kyosho leaves you in the dark as to which fluid weight to fill them with. The steering knuckles and hub carriers use combined kingpin/ballstuds (like the T3). The Ultima also uses a slipper design that permits spur gear changes without disassembly, but the slipper pad is smaller than those in the other trucks. The transmission is more "laid down" in the Ultima than in the Associated or Losi machines, and it uses a separate rear bumper that is independent of the motor plate.



TEAM LOSI TRIPLE-XT

Back in the days of "monster truck racing," Team Losi was the first to market a thoroughbred racing truck: the JRX-T. The LX-T soon followed, and when the ground-breaking Double-X buggy appeared, the Double-XT was not far behind. Likewise, the latest X-chassis has spawned a truck counterpart, the Triple-XT, which debuted in 2000 to unanimous praise. The recent release of the graphite-and-all-the-goodies Kinwald Edition Triple-X buggy signals the possibility of a similarly equipped truck in the near future, but for now, the Triple-XT sets the standard for big-tire off-road racing, Losi-style.



AT A GLANCE

Street price: \$209
Wheelbase: 11.4 in. (290mm)
Width: 13 in. (329mm)
Weight, as tested: 63.8 oz. (1,808g)
Fastest lap: 23.1 sec.



FEATURES

- 2.44:1 transmission with dual-disc slipper clutch.
- Team Losi Radius Rib and Taper Pin tires.
- Angled steering bellcranks eliminate bump-steer.
- Low-profile suspension for lower center of gravity.
- Full bearing set and steel turnbuckles included.
- Modular construction allows front suspension, rear suspension with transmission, or transmission only to be detached from chassis intact.

PERFORMANCE

CORNERING

The most neutral of the bunch. With the box setup, it had just enough on- and off-power steering to get through the tightest sections and still have enough rear traction to put the power down. A tap of the brakes brought the rear end out in a controllable slide allowing even tighter lines without losing much corner speed, and small steering corrections at speed didn't make the truck feel nervous.

JUMPING

The Triple-XT had a slight tendency to land nose first, and it stayed low over the jumps compared with the height we saw when the other trucks hit the same jumps at race pace. The Losi was also the most tolerant of botched landings; as long as you got one wheel on the ground, it seemed to roll out of any landing.

ACCELERATION

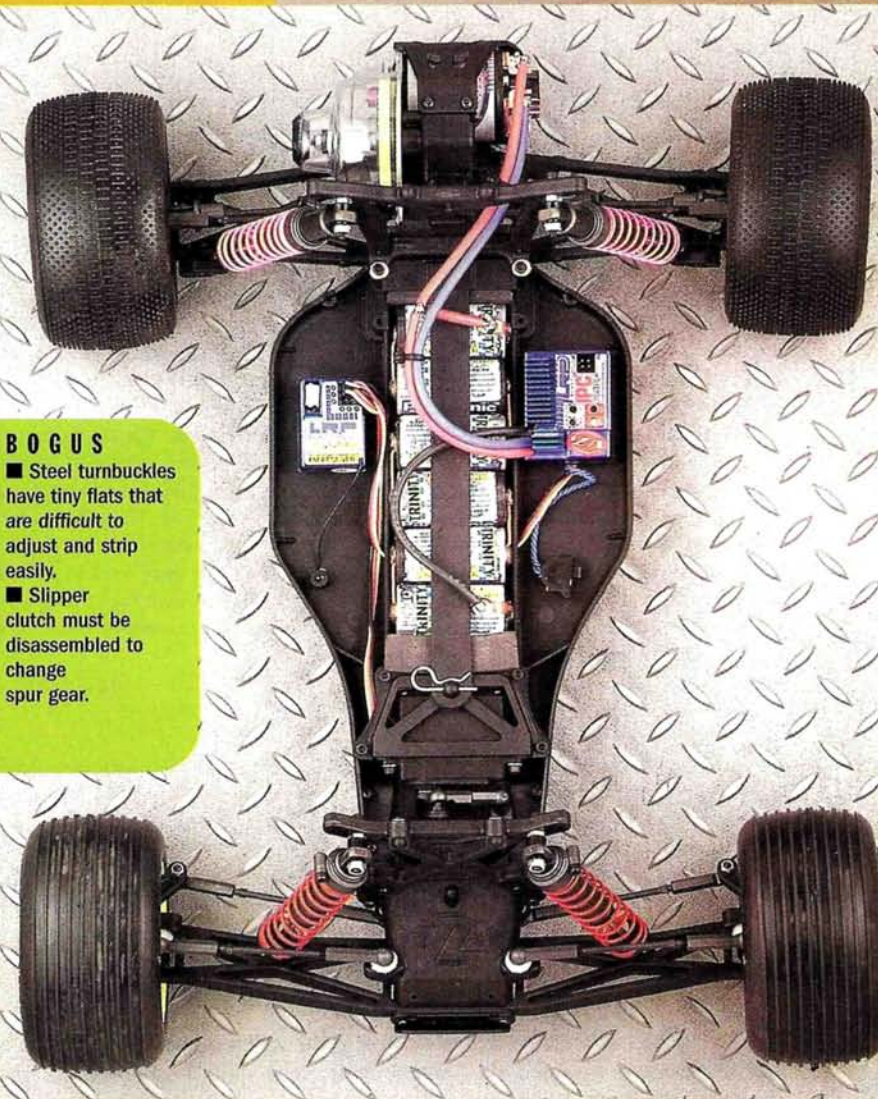
The Triple-XT was able to put power down anywhere on the track and was stable at all speeds, but it didn't seem to have the yank of the T3, even though both had identical motor setups. It turned the fastest laps, but the Triple-XT never had a wild-ride feel.

BONUS

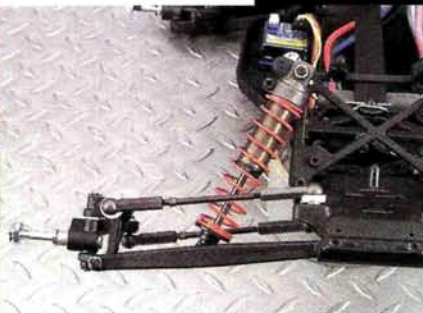
- Easy to assemble and wrench on.
- Externally adjustable differential.
 - Low center of gravity delivers excellent corner manners.
 - Smooth dual-disc slipper is an advantage on slippery tracks.

BOGUS

- Steel turnbuckles have tiny flats that are difficult to adjust and strip easily.
- Slipper clutch must be disassembled to change spur gear.



Above: the Triple-XT is the only truck to use a top brace; it clamps the servo in place. Note the rear-set front shocks; they contribute to the XT's overall low profile. Below (left to right): the XT's universals use a bolt-on plastic yoke to join the steel stub axle and steel dogbone ends. It looks chunky, but works well. The XT uses much longer front axles with greater offset than the T3 and Ultima, and it has the longest arms. You'll have to reset the slipper if you change the XT's spur gear, but the dual-disc design offers the most consistent action, thanks to its increased surface area. Note the separate rear bumper, which is independent of the motor plate to prevent it from being damaged in a crash. The latest Losi tranny is found in the Triple-X buggy and the XT truck. It serves them both well thanks to its 2.43:1 ratio. The gears are "stood up" to bring the motor closer to the rear suspension.



2WD Electric Race Truck Shootout

drivers weigh in

Greg Vogel—
assistant editor,
RC Car Action

Fastest lap: 23.8
seconds, Triple-XT
Slowest lap: 25.4
seconds, Ultima ST
Favorite Truck: Team Losi Triple-X.T



I put the XT wherever I wanted to in the corners, and I felt it was the most sure-footed when powering down the back straight. I like the Losi on the bench, too. The externally adjustable diff is very convenient, and Losi shocks are my favorites. They are so easy to disassemble, clean and refill that I actually don't mind working on my truck, and that means I'm motivated to try different damping setups rather than alter my driving style.

The Associated T3 was my second favorite. I like the steering capabilities of the truck and its forward traction, and the Factory Team kit is an all-out bargain; you don't need to buy any aftermarket options to hit the track and go racing at any level. My gripe with the T3 was that it bottomed out after larger jumps with the stock setup, and when the chassis slapped the ground, the truck wanted to spin out.

The Ultima has some features such as dual-cap shocks, a hinged battery hold-down, and built-in transponder mounts, but it really needs a decent starting setup and better tolerances to avoid suspension slop. I think the truck could be made to work as well as the T3 or Losi, but inexperienced tuners will wish the manual offered more help.

Derek Buono—assistant editor,
RC Car Action

Fastest lap: 24.2 seconds, Triple-XT
Slowest lap: 25.4
seconds, T3
Favorite truck: Losi
Triple-XT



All these trucks are highly competitive and could all be tuned to match any track, but the Losi Triple-XT had an advantage. It gave me a great feeling of confidence on the track. If I made a mistake, a quick counter-steer or tap of the brake bailed me out. The XT allowed me to attack the track when it was time to get aggressive, and it clicked off faster, more consistent laps in cruise mode. The Associated T3 had better steering feel but didn't seem as stable; when I tried to push the truck harder, my lap times increased. The Kyosho had a better straight-line stability than the T3, but the Losi had the best combination of front and rear traction, and that's why I chose it as the best truck; it's simply easier to drive fast.

Rob Betts—Long Island
Raceway hotshoe

Fastest lap: 23.1 seconds, Triple-XT
Slowest lap: 23.8 seconds, Ultima ST
Favorite truck: Team Losi Triple-XT

My personal car is a T3, but of the three trucks we tested, I felt the Losi was the eas-

iest to drive. It had a lot of rear traction, and if you bobbled it over the jumps, you could get away with it. It had a little push but not a push that would hamper you that much; it felt as if it was a minute adjustment away from being perfect. My only gripe is that it felt "flat," as though it didn't want to get up and go. The T3 had the most steering and the most punch; if you are a smooth driver, it will give you the most precise control of all the trucks.

It did feel as if something was wrong in the back; I drive a lot of stock T3s when I help guys here at the track, and they seem easier to drive than the T3 we tested. The rear end felt too stiff, and it tried to get loose if I didn't hit the jumps right. If you bottom out with a T3, it may get squirrely, but it isn't usually as bad as the T3 we tested.

I think the Losi and T3 will perform equally well when they're completely set up. There will always be a track on which one has an advantage over the other, but they'll usually come out even. Of the trucks we tested, the Losi was easiest to drive and that's why I picked it, but for my money, I would get the Factory Team T3. It has all the stuff you need to race, and once you've tuned it to your track, it will match anything else out there.



And the winner is ...

The T3, Triple-XT and Ultima ST are close in price, well equipped, easy to build and maintain, and durable. It seems the greatest strides in race-truck design have come and gone, leaving a well-established formula for competitiveness that includes modular design, upswept chassis sides and 3-gear bottom diff transmissions. The formula works; all three machines are ready to win races, and we would be happy to own any one of them. But in racing, it's all about the lap times, and (for us) one truck is simply faster. That truck is the Team Losi Triple-XT, and that's why we chose it as the best truck to have on the grid this Sunday. It went around the track the fastest, with the least amount of effort at the wheel.

The Factory Team T3 and the Ultima ST are just a tick behind the Losi in out-of-the-box performance, but in terms of value, the Factory Team T3 gives racers a lot more racin' stuff than the Ultima and Triple-XT for not much more money. The T3's titanium turnbuckles, graphite package, MIP CVDs and other niceties (as well as more consistent and slightly quicker laps than the best we could squeeze out of the Ultima) make the T3 our number-two pick.

That brings us to the Ultima ST Type R, which shows lots of potential but needs a setup. Now that Kyosho has a talented squad of drivers, they should be put to work at coming up with a good all-around setup for the ST, and that setup should be included with the kit. As it stands, Kyosho offers no advice on what shock fluid weight to start with, and although the spring rates are in the ballpark, they don't feel as well-sorted-out as the other trucks'. You need only look at the Type R to know it can work, but out of the box, it isn't hooked up. Seasoned tuners should have no problem making the Ultima handle any way they want it to, but most builders will want something a little closer to dialed-in from the get-go. ■

SOURCE GUIDE

ASSOCIATED ELECTRICS

3585 Cadillac Ave., Costa Mesa, CA
92626-1403; (714) 850-9342; www.rc10.com;
www.teamassociated.com.

HITEC RCD INC.

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(858) 748-6948; www.hitecrad.com.

KYOSHO

Distributed by Great Planes Model
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P.O. Box 456, Beaumont, CA 92223;
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TEAM LOSI

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TRINITY PRODUCTS INC.

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(732) 635-1600; www.teamtrinity.com.

Take your
Traxxas Maxx
out of the
backyard
and into
battle!

by George M. Gonzalez

MAXX-IMUM RACING PERFORMANCE!

There's no denying the popularity of the Traxxas T-Maxx and E-Maxx. Although widely regarded as the ultimate play machines, these go-anywhere, do-anything monster trucks are appreciated not only by backyard bashers but also by racers, many of whom have caught Maxx fever. As a result, many tracks around the country have started racing classes for this new breed of monster truck.

If you're thinking about racing your E-Maxx or T-Maxx at the local track, this article is for you. The next few pages are filled with information about how to set up your Maxx chassis and suspension for serious competition. You'll find advice on selecting the right hop-ups, building the ultimate shocks and choosing aftermarket electronics. My race-prepped E-Maxx is the star of the photos, but all of the setup advice (except the motor, battery and ESC stuff!) applies to the T-Maxx as well. Clear off some space on your workbench because it's time to start wrenching.





PARTS LIST

TRAXXAS

- E-Maxx RTR truck—part no. 3906, \$329
- Titanium suspension pin—4939R, \$24
- Aluminum pivot balls (2)—933X, \$40/set of 4
- Aluminum transmission skidplate—4947, \$18

RPM

- T-Maxx/E-Maxx molded A-arms (4)—80265 (Neon blue), \$10.95/set
- T-Maxx/E-Maxx bulkhead braces—80155 (Neon blue), \$8.95
- Quick-adjust spring clips (2)—70325 (Neon blue), \$5.95/set
- Spring cups (2)—73155 (Neon blue), \$2.95/set of 4
- Two-stage shock pistons (2)—80430 (medium-heavy damping), \$6.95 each

FACTORY TEAM

- TC3 clip-on motor heat sink (2)—3928 (long), \$13 each

PRO-LINE

- Chevy Silverado crew-cab body—3100, \$26

LUNSFORD

- Punisher Super Duty titanium tie-rod set (F/R)—12750, \$28
- Fat Boy titanium motor-mounting screws—7903, \$12.50

PANTHER TIRE

- Meat Grinder tires (2 pairs)—PT95, \$29/pair
- Racing foams (2 sets)—PT 954, \$17 each

REEDY MODIFIEDS

- Zappers RC2400 (2 matched 6-cell packs)—628, \$70 each
- Ti modified 14-turn double motors (2)—376, \$95 each

NOVAK

- Double-rooster combo kit—1855, \$265
- XXL 2-channel FM receiver—2427, \$104

GS RACING

- 7075 aluminum alloy flat-head screws—GSS01408 (blue/3x8mm), \$4.29
- 7075 aluminum alloy flat-head screws—GSS01410 (blue/3x10mm), \$4.29
- M3 aluminum locknut—GSN00210 (blue), \$6.99

FUTABA

- S9402 high-torque servo—FUTM0104, \$159.95

KIMBROUGH

- Large servo-saver—121, \$6.60

HITEC

- Lynx 3D radio system—123271, \$169.99

AFTERMARKET UPGRADES

• **Panther Meat Grinder tires.** These provide incredible traction, both on and off the track, and they're long-wearing, too. The tires do not include foam inserts, however, and firm inserts are required to prevent sidewall flexing because of the tire's soft compound. I used Panther's optional three-piece, firm foam inserts, but Trinity's Low Roll Foam tire inserts also work very well. The tires hook up on both hard-packed and loamy or fluffy track surfaces, and that makes them a good investment.



• **RPM molded A-arms.** If your track has a lot of big-air jumps, you might want to consider these heavy-duty suspension arms; they're noticeably beefier than the stock arms and are designed to take more abuse. The RPM suspension arms are packaged in upper and lower pairs and cost



only a couple of dollars more than stock replacement arms. The RPM arms are also available in three colors: blue (as shown), purple and black. Because of their tight tolerances, some hand-fitting might be required to make the arms pivot without binding, but it's well worth the effort.

• **RPM bulkhead braces.** The E-Maxx (and newer T-Maxx trucks) includes molded front and rear bulkhead braces that tie the two bulkhead sides together for increased support. The RPM braces are stronger than



the stock pieces, and the front brace is longer than the stock brace; this helps support the bulkheads more securely. The front brace's longer length also prevents dirt and debris from entering the front diff case and skidplate. The braces are secured with hard steel 440 machine screws instead of the self-tapping screws that always seem to bend. Consider these braces a must-have for racing on super-cross-style off-road tracks.

• **Lunsford Super Duty titanium tie rods.** To handle the Maxx trucks' extra heft, these tie rods have a thicker outer diameter than Lunsford Racing's standard Punisher titanium tie rods. They also feature 3.5mm-o.d. threads to increase strength in this crucial area. The T-Maxx/E-Maxx Super



Duty tie-rod set includes front and rear tie rods and a machined-aluminum wrench for easy toe-in/out adjustment. Install these tie rods, and your truck will be stronger—and 6 grams lighter!

• **Traxxas titanium suspension pins.** These units are lighter and stronger than the stock chrome-steel screw pins and include the necessary E-clips to complete the installation. Install these hinge pins, and you'll reduce your truck's weight by 16 grams—over half an ounce.

• **Traxxas aluminum pivot balls.** These aluminum pivot balls are significantly lighter than the stock chrome-steel units and are hard-anodized and Teflon-coated for extra strength and exceptional smoothness. The aluminum pivot balls are sold in packages of four, so two packages are required to outfit the entire truck.

Installing a complete set will shave 39 grams off the chassis and make the suspension pivot smoother, too.



• **Traxxas aluminum transmission skidplate.** This little item not only protects the tranny, but it also makes the chassis more rigid by tying the two lower braces together.

• **GS Racing aluminum screws and locknuts.** I replaced many of the stock chrome-steel Phillips-head screws and steel locknuts with heavy-duty 7075-T6 aluminum flat-head machine screws and aluminum locknuts from GS Racing. I also replaced the remaining Phillips-head screws with hex-head machine screws to make maintenance a little easier.



• **Factory Team heat sinks.** These huge motor heat sinks are designed for the Team Associated TC3, but they work equally well on the E-Maxx. Of course, you'll need to pick up two (one for each motor). The heat sinks dissipate heat very effectively, thanks to the increased surface area of the cooling fins. Install the heat sinks so they make contact with the aluminum motor mount, and you'll double their effectiveness.

ELECTRONICS

- **Futaba high-torque servo and Kimbrough servo-saver.** With 111 oz.-in. of torque and a transit speed of 0.10 second per 60 degrees, the Futaba S9402 coreless, metal-gear servo guides this 9-pounds-plus truck with pinpoint accuracy. I also replaced the stock servo-saver with a heavy-duty Kimbrough unit.

- **Dual Novak Rooster ESCs.** The Novak Double Rooster ESC combo includes a universal Y-connector for installing the two ESCs in your receiver and features standard Tamiya-style battery connectors and bullet motor connectors to make installation a snap. I hardwired the motors and replaced the battery connectors with Deans Ultra Plugs to limit power loss. For the full story on how the system works, check out "A Tale of Two Roosters."



- **Novak XXL FM receiver.** The XXL is small and light and provides excellent reception. It has only two channels, but since I have the E-Maxx tranny locked into second gear, a 3-channel receiver is not necessary.

- **Reedy Zappers batteries.** Matched cells provide more punch and run time than standard stick packs, so I installed a pair of matched RC2400 side-by-side racing packs assembled with Reedy Silver Battery Bars and GS Racing 12-gauge Ultimate wire.



- **Reedy Ti modified motors.** These motors have stronger magnets and an all-new motor can that's designed to optimize the increased magnetic field for greater torque. The motors are equipped with 14-turn double armatures so they won't overtax the Novak speed controls. To my amazement, the stock gearing is almost perfect for these particular motors and the dual ESC power system. One note: extended reverse operation isn't good for motors with advanced timing; just use it to back out of trouble.

A TALE OF TWO ROOSTERS

The stock 14.4V VX-12 ESC does not have brakes or a reverse delay, and that makes it difficult to drive the truck competitively—particularly if the track has a lot of jumps. I found this out the first time I took a jump with the E-Maxx and grabbed for the brakes in midair to bring the truck's nose down for a proper landing. Instead, the truck went into reverse and did a 180-degree backward flip in the air and landed hard on its lid.



Unfortunately, ESCs that will reliably handle 12 cells wired in series—and dual motors wired in parallel—and that also have brakes or a reverse-delay feature are not yet available. In the meantime, Novak has put together an alternative power system that has unique advantages over the stock 14.4V E-Maxx power-management system. Its new Double Rooster Combo kit includes two Rooster Reversible ESCs and a Y-harness that allow both ESCs to be connected to your receiver. The Double Rooster Combo is actually two complete 7.2V RC car electronics systems wired together that allow standard-size motors to be used with the stock E-Maxx gearing. Monster-truck enthusiasts have been using similar power systems for years on their Clods and USA-1 trucks to increase run time, but Novak is the first company to put everything you need into one handy package.

The Rooster ESCs have a system that prevents reverse from engaging until the motors have slowed to a safe speed. This is a great feature because it protects the truck's drive train from the shock associated with slamming it from forward to reverse and vice versa, and it allows you to correct the truck's attitude in the air when you negotiate jumps. The Roosters also have a reverse lockout feature that eliminates the reverse function altogether when you race on tracks that disallow driving in reverse. When the reverse function is disabled, the dual Rooster ESCs provide incredible braking power, which is necessary to slow down this heavy truck and make attitude adjustments in midair. The dual Roosters also have their BEC systems wired in parallel; this means that super-high-torque servos can be used and will receive maximum power until the batteries have completely dumped.

TWO-STAGE SHOCK SETUP

Many E-Maxx/T-Maxx racers fill up their shocks with heavy shock fluid (in the 70 to 90WT range) to reduce body roll and give the shocks enough damping to prevent the chassis from bottoming out when landing after big jumps, which is OK if the track is relatively smooth; but if the track is full of ruts and bumps, the shocks will not be able to rebound quickly, and the truck's handling will suffer. What to do?

I have found that RPM Two-Stage shock pistons are the solution. With the RPM pistons, you'll be able to set up the shocks with fluid of lighter viscosity to tackle the rough sections of the track and still have enough damping to reduce body roll and prevent the chassis from bottoming out after landing big jumps. Here's how they work: the two-piece pistons are keyed together and secured on the shock shaft with two E-clips. The lower piston has four holes, and the upper piston has six holes. When the suspension is compressed, the pistons are joined, exposing only four valve holes. When the suspension rebounds, the two pistons separate, exposing 10 valve holes. The shocks provide more damping during suspension compression and less damping during rebound, instead of having the same resistance in both directions as with conventional shock pistons.

With regular shock pistons, you have to reach some sort of compromise between compression damping and rebound damping, while the RPM pistons let you get much closer to the ideal settings for both.

TRANNNY TRICKS

After a day of practicing with a completely stock E-Maxx, I discovered that I actually put in faster lap times when I simply left the truck in second gear and never downshifted into first. I decided to lock the tranny into second gear and remove the shift servo to save some weight. I simply pushed the shift lever all the way into the tranny and locked it into place with a 1.5-inch-long piece of fuel tubing (see arrow in photo below). As a result, the truck is more than 2.5 ounces lighter because it's not carrying around the weight of the servo and the shift linkage.



The extra room came in handy, too; I mounted the Novak receiver on a hand-made Lexan shelf that's secured to the mounting holes of the missing shift servo and installed one Rooster in place of the stock VX-12 and the other where the receiver normally goes (ordinarily, the Roosters must be taped together and mounted on their sides in place of the VX-12 ESC). The split layout makes it easier to access the pinion and spur gears and distributes the weight of both ESCs evenly on the chassis.

ON THE TRACK

I decided to test my racing-inspired E-Maxx indoors at So Cal Raceway in Huntington Beach, CA. The track had a hard-packed, nicely groomed surface, a tight infield and jumps around every corner. The first time I pegged the throttle, the E-Maxx lifted its front tires slightly and did a controlled wheelie down the straightaway. I let off the throttle slightly to bring the tires back down and tucked the truck into the first corner so gracefully, it made me look like a pro. I was amazed at how much torque the truck had, considering that the tranny was locked into high gear. The gearing seemed right in the ballpark because the truck reached top speed before the end of the straightaway, and the motors, batteries and ESCs weren't overheated. Battery run time suffered, but I got enough run time to complete a 5-minute race and still had power to spare.

The E-Maxx effortlessly cleared every jump the So Cal track had to offer, and I appreciated the ability to control the landings with careful throttle and braking. The E-Maxx handled beautifully, but I noticed that compared with the T-Maxx, it has more body roll in the corners and doesn't seem to transition as quickly. This is undoubtedly because of the E-Maxx's higher CG, but it didn't really pose a problem. I ran a few packs through the truck and then packed up my gear and headed to Hot Rod Hobbies in Saugus, CA.

This track was absolutely brutal. Ruts and cracks surrounded the hard-packed, dusty surface, and it was riddled with giant jumps that looked as though they had caused their fair share of broken parts. Yes, I was in E-Maxx country, and I loved it! Interestingly, my E-Maxx felt right at home under these conditions; I can't remember the last time I

E-MAXX/T-MAXX SUSPENSION SETUP

	FRONT	REAR
Shocks	Stock Ultra Shocks	Stock Ultra Shocks
Springs	Stock red	Stock red
Shock pistons	RPM 2-stage (purple-firm)	RPM 2-stage (purple-firm)
Shock fluid (E-Maxx)	40WT	40WT
Shock fluid (T-Maxx)	30WT	30WT
Internal travel limiters (E-Maxx)	3mm	3mm
Internal travel limiters (T-Maxx)	6mm	6mm
Lower shock-mounting position	Outside hole on arm	Outside hole on arm
Ride height	Arms slightly above level	Arms level with surface
Camber	1.5° negative	2° negative
Toe angle	0°	1.5° in



Because the T-Maxx is more than one pound lighter than the E-Maxx and has a lower center of gravity, you can run lighter damping and more internal travel limiters in the nitro truck.

had so much fun racing an RC truck. The E-Maxx caught some big air and touched down every time with a giant "thud," but no obstacle on the track posed a threat to my E-Maxx.

The benefits of the RPM 2-stage shock pistons were really noticeable at this particular track. Not once did the truck get out of shape, even when I ran it over the track's many irregularities at full speed. This truck is dialed and ready to race! ■

SOURCE GUIDE

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36 Meridian Rd., Edison, NJ 08820; (732) 635-1600; fax (732) 635-1640; www.teamtrinity.com.

by Greg Vogel and Derek Buono



LOSI SWEEPS WINTERCHAMPS

Team Losi vehicles have been sweeping big events lately; the latest was the Florida WinterChamps, where Jukka Steenari took both Mod Truck and Mod 4WD with his Team Orion-powered Losi vehicles, and the legendary Brian Kinwald took top honors with his Trinity Triple-X buggy shortly after the release of the Kinwald Edition. Congratulations to all the participants. Look for full race coverage in the next issue of *RC Car Action*.

Pro-Line makes a home-track advantage

The boys at Pro-Line must have been tired of the 10-minute hike to "The Dirt," so they took the next natural step: they built a track at the Pro-Line facility. The huge, off-road track features silly-size jumps and bumps. Eight-thousand-pound barriers will surround the track, and a lofty drivers' stand will provide a good view of the layout. Pro-Line plans to hold some major races here, including the Nitro Maxx Challenge.



Crono Team Expert kit update

If you saw the Crono Team Expert review in the March 2001 issue of *RC Nitro*, you may have noticed that we listed a few "misses" about the buggy. We had a problem with the required special receiver pack, the needle clutch bearing and the fact that no oils and greases were

included to complete the kit. SVM has addressed our dislikes and has updated the kits so that they now include a 700mAh receiver pack, ball bearings for the clutch and the necessary oils and greases. Oh, and the hex hubs are 17mm, not 19mm.

Barry Baker now Fantom/SMC-powered

Barry Baker made a surprising move by departing Team Trinity. He still runs for Yokomo but is now using LRP speedos with Fantom Motors and SMC batteries.



Craig Drescher gets a job!

Veteran European racer Craig Drescher has a new job. Not only will he represent Team Associated on the track, but he has also recently taken on the responsibility of marketing director for Europe. Congratulations to Craig and Associated on their new partnership.

SITE SEEING



WWW.CONVERT-ME.COM

For all you conversion-impaired people (count us in), this handy little site helps you figure lengths, weights and other helpful information. If you don't bookmark it, you'll wish you had when you need to know how many slugs are in a pound.



SPEED SHOP

Hardcore Racing TC3 servo/transponder mount

TC3 parts are a new venture for the boys at Hardcore. The first off the mill is this machined-aluminum servo/transponder mount. The one-piece unit replaces the plastic mounts with a sturdy aluminum job. As always, it's available in all of the Hardcore colors—blue, purple, silver and green. **Aluminum TC3 servo/transponder mount—HCR-00221, \$32.**



Schumacher alloy hub carriers and aluminum shock bottoms

The new alloy hub carriers for the Axis/Axis 2 allow even more tuning options. The two lengths of ball studs that are included mean you can dial traction in and out as needed. The aluminum shock bottoms replace the plastic stock units. The bottoms include a fresh set of O-rings and foam for a rebuild. The aluminum parts have been anodized purple to match all other Schumacher aluminum parts. **Alloy hub carriers—U2163T, \$29.50/pair.**
Alloy shock bottoms—U1818U, \$17.95/pair.

HPI Racing Advan A038 belted tires

Whether your car is electric- or nitro-powered, you'll need reliable rubber to get the power to the ground, and if the treads look cool—even better. HPI's Yokohama Advan knockoffs are officially licensed with the high-performance Japanese tire maker and replicate the Advan A038's distinctive tread pattern. The 24mm tires are offered in three compounds: 27R, 33R and a new "carpet" compound designed especially for carpet racing. The 27R is designed for track temperatures ranging from 68 to 95 degrees F (20 to 35 degrees C), and the 33R is designed for surface temperatures of between 77 and 144 degrees F (25 to 60 degrees C).

Advan A038 Belted 24mm tire (27R)—4762, \$15/pair.
Advan A038 Belted 24mm tire (33R)—4763, \$15/pair.
Advan A038 Belted 24mm tire (carpet)—4767, \$15/pair.



Penguin R/C graphite GT-4 parts

Penguin R/C has been busy carving parts for the Yokomo GT-4. New graphite front and rear shock towers are great hop-ups; they reduce flexing and are a good improvement over the stock plastic. **Graphite shock-tower braces (F/R)—P1713/P1714, \$6.99.**

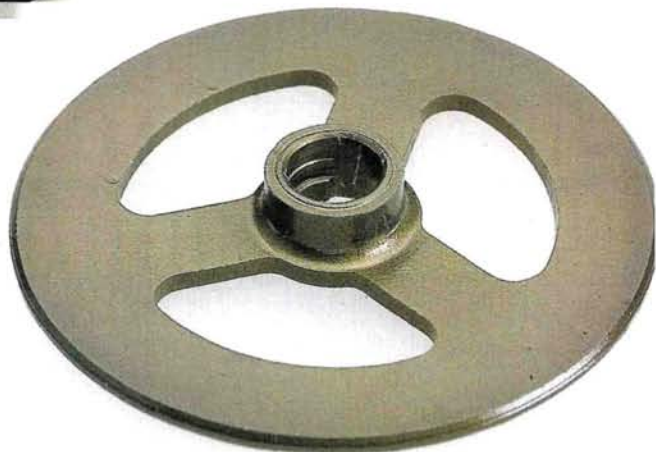
SPEED SHOP



Trinity Final Solution

If you run nitro engines, you shouldn't be without after-run oil. Trinity's new Final Solution is specially designed to displace water and provide engine-life-extending lubricant when it isn't running.
Final Solution—TK8104, \$5.99.

Trinity Team Kinwald light-weight slipper plate



Trinity now offers hard-anodized light-weight slipper plates for all electric and nitro Losi vehicles. The machined plates are lighter than the stock plates, and less rotating mass means quicker acceleration. They're available individually and as a set.
Trinity lightweight slipper plate—TK5058, \$13.99; TK5085S, \$24.99 (set).

Power Line Novarossi heat-sink head

If you are looking to replace a stock heat-sink head, Power Line has a large, machined-aluminum head that can be bolted directly onto the powerful mill. The head comes with both types of buttons that accept regular and turbo plugs; simply change the button and use either type of plug.
Power Line Novarossi head—NR0012P, \$19.99.



Trinity metal-can fuel



These new metal cans are made especially for racers in California, where fuel is required to come in cans, but you can order any Trinity Fuel in the new packaging by putting an "M" at the end of the part number.
Trinity metal-can fuels; part numbers vary.

TRACK THREADS

Team Yokomo track apron

It's funny how most racing shirts are bright white—at least for one race day. Previously reserved for bakers and chefs, this track apron from Yokomo keeps the mess off your new shirt and on something that's designed for grime. Available with Yokomo's logo on the front, it features handy pockets for storing key tools.
Three-pocket racing apron—AA-BLK, \$18.50.



5 QUESTIONS

Age: 28

Last big win: TQ'd and won the NORRCA Nationals in Missouri
Favorite track: old Detroit track

Sponsors: Associated, Mugen, O'Donnell, JR Racing, Progressive Suspension, MIP, Robinson, Arnet, Nuova Faor, National RC, Thunder Designs, Treadz

When I'm not racing: I watch motocross racing because I'm too fat to ride.



Richard Saxton

Radio Control Car Action: What's up with the tires on your GT? Do you race with those?

Richard Saxton: (laughing) No, no! Those are just on there to show the new line of tires called Treadz. These tires are for the backyard bandits; they come mounted and glued for a reasonable price. You won't see me running that particular tread, but race tires are available.

RCCA: What was your biggest racing blunder?

RS: The last 1/8-scale Worlds, where I didn't use my head and pushed the car too hard. I was in a qualifying position and tried to go too fast instead of finishing the qualifier. I broke a simple shock-mounting screw, which cost me a run in the A-main.

RCCA: Do you have an archrival?

RS: I wouldn't consider anyone my archrival because I get along with almost everybody, but I do have a friendly competition with Mark Pavidis. When we get behind the wheels of our 1/8 buggies, there is usually some exchange of paint. We just are so competitive that we battle on the track pretty hard.

RCCA: If you could choose your theme music, the way pro wrestlers do, what would it be?

RS: Some supercross music makes the hair on my neck stand up; if I had to choose, it would be something by Korn. They get my adrenaline pumping; they make me want to take my radio and throw it around.

RCCA: You're mainly a nitro racer, and now you're trying electric racing. Have you had any difficulty driving electric vehicles?

RS: I have filed for early retirement from electric racing. Electric racing is a little more precise than nitro. That's not to say that either is more difficult than the other because they are equally difficult. Nitro just fits my style better; you could say it's my specialty. I'm pretty envious of drivers like Masami and Pavidis who can drive anything. It seems that if you can drive two-wheel-drive buggies, you can drive anything.

UNDER THE HOOD

RICHARD SAXTON'S **ASSOCIATED**
FACTORY TEAM RC10GT



Right: note the factory-looking guard that protects the throttle servo and receiver. Below: the Progressive shock reservoirs that Richard swears by.



Saxton's Factory Team GT remains basically stock. The play tires are just for show, and the shock reservoirs are the only meaningful change from stock spec.

FACTORY OPTIONS

Richard runs Progressive Suspension piggyback reservoirs for ultra-smooth, air-free shocks. Other than that, Richard stressed that the Factory Team GT comes with everything you could want.

RICHARD'S STANDARD SETUP

	FRONT	REAR
Shocks		
—piston	No. 2	No. 1
—oil	35WT	30WT
—spring	Blue	Green
—limiter	None	None
Shock stay	A	A
Suspension arm	C	E
Ride height	4.5mm	5mm
Camber	3°	3°
Camber-link position	—	G
Caster	30°	—
Toe-in/out	0°	3°
Wheelbase	—	Short

MODIFICATIONS

Richard made a custom aluminum side plate to protect his receiver and throttle servo.

EQUIPMENT

RADIO SYSTEM: JR R-1

STEERING SERVOS: (throttle/steering)
 JR DZ8450/DZ8450

ENGINE: Novarossi

PIPE: O'Donnell

FUEL: O'Donnell 20%

TIRES: Treadz

RIMS: Treadz

BODY: Associated Stock



Richard added captured ball ends to the rear suspension to prevent them from popping off in a crash. Check out the Deans Ultra plug on the receiver pack; it eliminates the need for a switch.



SOURCE GUIDE

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Airport Business Center, 17951 Skypark Cir., Ste. K, Irvine, CA 92614; (949) 252-8663; www.yokomousa.com.

LAST LAP

What is the one hop-up option on your car that you couldn't race without?

Titanium turnbuckles. I wouldn't even buy my car until I could afford to buy titanium turnbuckles, too. Why hop up later if you can hop up now?

—Brayden Sundstrand

The one option that I wouldn't race my RC10GT without is my MIP Temp Gauge 2. It is an important tuning tool for my motor. It gives me an edge because I can make some crazy horsepower and keep it cool.

—Brian Richards

A perfect set of tires and rims for the track. Asking fast people and testing new setups definitely help a racer. I could not race if I had the wrong tire, insert, or rim.

—Chris Tsutsui

Quiero saber los precios de un auto radio control de "rally."

—Poviña Tomás

My Airtronics 94257 servo. Having a high-speed, high-torque servo is the only way to go for any class because no matter how fast your car is down the straight, it's the speed and quickness you carry through the corners that will let you pull away from everyone else.

—Andy Curran

Wide front bumpers and nerf wings on my TC3 because of those hardcore racers who try to run you into the wall.

—Steve Park

The one hop-up I need is the Trinity motor clamp on the Double-X4. With the stock, I was always blowing spur gears; now, I've gone one year without replacing one.

—Wayne Rowzee

Titanium turnbuckles. Anything else might increase your performance or durability, but these last a hundred times longer than stock, and for a novice driver like me, a little crash insurance is nice!

—Sam Crouse

Ball bearings! They are pretty cheap and, in my opinion, are "the most bang for the buck" option out there.

—Scott Andresini

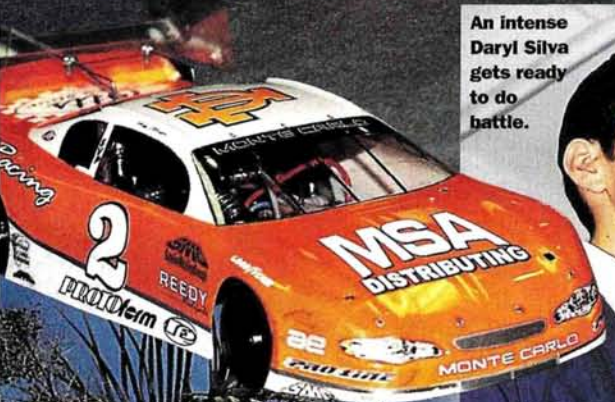
NEXT MONTH'S QUESTION

The latest high-capacity cells allow more run time than ever. Should races be longer to exploit this, or stay the same so everyone makes run time more easily?

Respond by clicking "Last Lap" at www.rccaraction.com, or email your responses to gregv@airage.com.



Above: Bolink's smilin' Steve Rule wrenches on his Legends machine. He gets a killer discount!



An intense Daryl Silva gets ready to do battle.



Below: how can you tell when Barry Baker is cracking on somebody? His lips are moving. That's promoter Mike Boylan next to him, enjoying a laugh at the expense of the guy Barry is ribbing.



Below: Trinity's Josh Cyrul was The Man all weekend, and took three of the Snowbirds' four pro mod classes.



Mike Boylan's

7th ANNUAL SNOW

Over the past six years, the Snowbird Nats has grown into one of the nation's top oval events. But with the closing of Thunder Raceway, the former home of the Snowbirds, promoter Mike Boylan needed a new venue if the race was to survive. Mike's solution was to roll out some Ozite in a Ramada Inn's ballroom in Orlando, FL, for some flat-track action, but this time, it wouldn't just be oval racers who would take the field. Thanks to some quick-change PVC pipe barriers, the 2001 Snowbirds track was easily reconfigured for cut-and-thrust on-road action. Was the idea a success? Nearly 400 racers thought so. Here's how the four-day event went down.





Above: Dale Epp is proud of his Protoform creations but proudest of his son, Adam. He drives, he paints, he designs; the kid has skills! Right: Josh Cyrul and Chris Doseck buff the traction compound off their tires before a heat. Both are relaxed until the tone sounds, and then it's all about business.



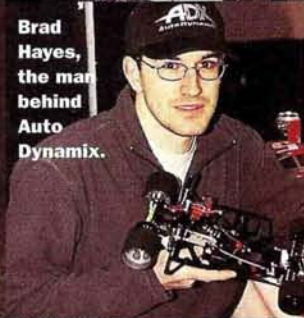
Below: Frank Polimeda and Chris Doseck get ready for A-Main action.



"Pro Parts" Brett Redlin fielded his "Daddy" 1/10 and "Junior" 1/12 cars.



Say what you will about their music, but the Partridge Family bus is a great way to get to a race.



Brad Hayes, the man behind Auto Dynamix.

BIRD NATIONALS



By Peter Vieira

SPONSORED BY TRINITY AND RADIO CONTROL CAR ACTION

Trinity's Cyrul and Associated's Silva Reign Supreme at Snowbirds



RACE ACTION: **ON-ROAD****TOURING STOCK**

- HANDOUT MOTOR ● RUBBER TIRES ● 5-MINUTE HEATS ● 5-MINUTE MAIN

Alex Lopez TQ'd the class in only his second run with a Schumacher Axis 2 (he formerly campaigned a Yokomo as a privateer). Alex held on to the lead for just two laps before Mark Frechette moved his own Axis 2 into first, while Michael "Toastie" Toth bided his time mid-field, moving up steadily to battle with Alex for the back half of the race. It looked like an easy win for Mark as he led laps eight through 20 with a full straight-away lead, but Alex and Michael were wheeling it with all they had. It all fell apart when Mark piped his Schumacher; he was marshalled just in time for an Axis-versus-Axis drag race with Alex, and Mark just couldn't get around him. But Alex didn't win; Toastie Toth sneaked in during the carnage to take it all away! I have to confess, I missed the move, but the transponders don't lie.

TOURING SPORTSMAN MOD

- TRINITY CHAMELEON MOTOR ● RUBBER TIRES ● 4-MINUTE HEATS ● 4-MINUTE MAIN

Barry Baker in Sportsman class? The Fabulous One was the TQ to the surprise of

Right: Grand Slam Hobbies set up a hobby shop to keep the racers stocked up and also got more than a few spectators into their first RC kits before the weekend was over. Below: Outside the track area, drivers set up pits, and some of the sponsors set up shop. Here, Niftech's Julie Knaus talks racers into a set of Rocket Rings.



no one, but it took only one lap for Barry to roll his Trinity-powered Yokomo over a corner dot, from where he enjoyed an upside-down view of Michael Toth's Yokomo moving into first with the rest of the field in tow. Barry had to fight hard to get back to the front, but he secured the lead and the win within the final four laps. Joel Bandera proved his mettle by holding off the out-for-blood sportsmen for 18 laps and snaking around Toth in the final seconds to take second; Toth parked his Yokomo in third.

THANK THESE GUYS

Trinity and *RC Car Action* got top billing as Snowbirds sponsors, but a lot of other companies pitched in, too. I promised Mike Boylan I would mention them all; here they are, in no particular order:

Minnreg RC Club
Auto Dynamix
TRC
Novak
RCResults.com
Team 1

Hitec Racing
Schumacher
Grand Slam Hobbies
Protoform
Superior Hobbies
Hobby Warehouse

HOW THE RACE WAS RUN

■ **PRACTICE.** The Snowbird Nats began on Wednesday with the first day of practice. Through Friday, regular intervals of controlled practice for each class were run, and there were also club races on Wednesday (for the oval guys) and Thursday (on-road) to serve as warm-ups for the Nats. And if that wasn't enough wheel time for you, the track remained open all night every night.

■ **QUALIFYING.** The oval and on-road classes used different qualifying systems. All the oval drivers took three laps by themselves, and their single best lap counted toward a provisional pole position. The single laps were then used to seed the qualifying heats, which ran three times as heads-up races to determine the starting order for the Mains. For the on-road classes, three rounds of IFMAR qualifying were scheduled.

■ **THE MAINS.** Unlike most big RC races, the Snowbirds ran single Mains. One race, winner take all, so bring your lucky stuff.

TOURING PRO MODIFIED

- OPEN MOD ● FOAM OR RUBBER TIRES ● 4-MINUTE HEATS ● 4-MINUTE MAIN

Josh Cyrul show, Act 2. Josh Cyrul and Barry Baker qualified first and second, 8 seconds apart with 20 laps each, and Paul Lemieux' Schumacher Axis 2 also made the show with 20 laps—just 1 second behind Barry. At the tone, Josh blasted away with Paul in tow and Barry not far behind. Paul wheeled his SMC/Fantom-powered Axis 2 valiantly, but small mistakes cost him, and Barry got his Trinity/Yokomo machine into second by the halfway point. And that, pretty much, was the race. Josh stretched out his lead to nearly half a lap by the finish tone, and he added the Touring Mod Snowbirds title to his list of victories.

1/10 GTP STOCK

- HANDOUT MOTOR ● GTP BODY ● 4-MINUTE HEATS ● 4-MINUTE MAIN

Only four guys turned up for this class, which has lost just about all its relevance outside IFMAR since touring cars came along (that's just the way it went down; I didn't say I was glad about it). Eric Hanna, Dennis Cubbage, John Malin and Jerri Moss finished almost as they qualified; John and Dennis qualified second and third, but finished third and second. Eric Hanna and his Trinity Switchblade never left the pole, and Jerri Moss never left the back. I don't like to see any class disappear, but unless more 1/10 GTP fans start racing, it will be a Worlds-only class.

1/12 GTP MODIFIED

- OPEN MOD ● GTP BODY ● 4-CELL ● 6-MINUTE HEATS ● 8-MINUTE MAIN

Act 1 of the Josh Cyrul show began here, with an inauspicious start, as Josh's full-

Open 24 hours

Ever wish you could go out for a few practice laps at, oh, 3:30 in the morning? At the Snowbirds, you could. The track never closed! No matter what the hour, there were always cars on the carpet, and racers made good use of the tuning time. Between packs, many put their heads down and slept right at their benches. Ever wake up with E-clips stuck to your forehead? If you raced the Snowbirds, there's a good chance you did.

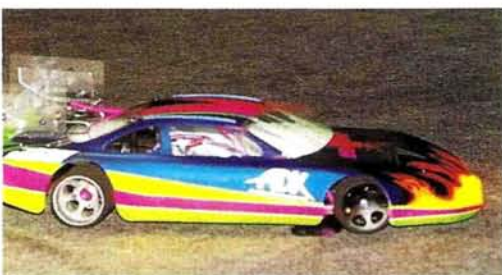


factory Trinity SwitchBlade clipped a barrier and instantly dumped him into seventh. Teammate Fernando Gordinho made good use of the blunder and took the lead with a charging Chris Doseck pushing his ADX hard right behind him. The pressure didn't last; Chris began to make mistakes and faded back, but Fernando only enjoyed a six-lap respite. That's when Josh put away Paul Lemieux to take second, only to find the new kid had some moves. The pair dived into lap 16, and then Josh got around him for good. Six laps later, Fernando succumbed to his Trinity teammate, and Josh held on to win with 39 laps. Fernando earned a no-shame second, and Paul Lemieux put on a terrific show on his way to third.

1/12 GTP STOCK

● HANDOUT MOTOR ● GTP BODY ● 4-CELL ● 6-MINUTE HEATS ● 8-MINUTE MAIN

Pole-sitter Billy Bruce was slapped around in a first-turn pileup that put his car all the way back into seventh place. Third qualifier Brian Schumate ran away with the race from there and led every lap with his Orion-powered Associated machine. Not that Billy gave up; he rampaged around the track and made it all the way back to second by lap 15 (turning the second-fastest lap of the race in the process), but he threw it all away a moment later with a trip into



pipe town. Danny Charles put in a solid second-place drive with his Trinity SwitchBlade 12, and John Genord's Powers-powered Associated rolled in third.

BOLINK LEGENDS

● LEGENDS SPEC MOTOR AND 4-CELL BATTERY ● 4-MINUTE HEATS ● 4-MINUTE MAIN

Bolink's Steve Rule and Jay Kimbrough took to the Legends On-Road and Oval classes with equal parts of good humor and grudge-match competitiveness. Even though it was Chad Desmarais who should have been the star of the on-road Legends show with his 15-lap TQ run, all eyes were on Steve and Jay. Chad simply drove away with the race, while first-turn wreckage left Steve in ninth and Jay looking good in fourth. Steve wasn't done for, though: he wheeled his Legends racer as fast as the little 4-cell car could go and passed Jay just

five laps later. In the end, second qualifier Darrel Taylor and Steve (who qualified third) finished after Chad in 2-3 order, while Jay ended the Main as he began it—seventh-place qualifier, seventh-place finisher.

RACE ACTION: OVAL

1/10 4-CELL STOCK

● HANDOUT MOTOR ● 4-MINUTE HEATS ● 4-MINUTE MAIN

Call this "revenge of the mid-pack qualifiers." Eric Anderson hyper-drove his Hyperdrive with a blazing 46-lap run that belied his fourth-place qualifying position. Bill Auchterlonie and his SMC-powered RaceTech ride never challenged Eric for the lead after taking to the grid in sixth, but I'm sure he was stoked with second. Likewise, third-place finisher Sonny Brown moved his RaceTech up from seventh.

1/10 6-CELL STOCK

● HANDOUT MOTOR ● 4-MINUTE HEATS ● 4-MINUTE MAIN

Two more cells mean a lot more speed, and the 6-cell cars turned in five more laps than the 4-cell guys'. The top three drivers all clicked off 4.5-second laps, but it was Mike Valentine and his Sureshot-powered RC10L30 who clicked off most of them. From his third-place qualifying position, Frank Ulbrich launched off the line to an early lead, but Mike Valentine caught him after 10 laps and never looked back. Kevin Koback had to work harder for his finish, and he drove his Hyperdrive with an equal mix of cool precision and on-the-edge raggedness to move all the way up from eighth to the two spot. With a little more time, he might even have been able to beat Valentine, but when the race is over, it's over, and he missed him by a scant 1/100 second! Danny Bartholomew took a Woods X-13 into third, one lap off the pace.

1/10 SPORTSMAN MODIFIED

● TRINITY CHAMELEON MOTOR ● 4-CELL ● 4-MINUTE HEATS ● 4-MINUTE MAIN

Brian Burkhardt, all the way. Brian's SMC-powered Associated RC10L30 pulled the most scoot out of the Trinity Chameleon motor, and his 4.6-second best lap was



Mike Valentine drove his Associated L30 to a 6-cell Stock victory.



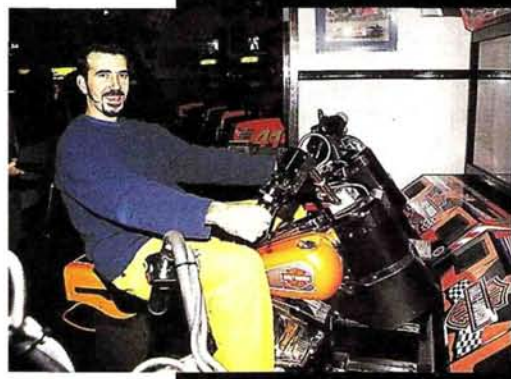
Race Rockin'

Race Rock is undoubtedly the coolest theme restaurant anyone with any interest in motor sports could ever go to. The place is filled to the rafters with all sorts of racing memorabilia, from stock cars and open-wheelers to quarter midgets and dune buggies to snowmobiles, motocross bikes and flat-trackers. And there are photos, helmets, driver suits, engines—and RC cars. Mike Boylan arranged for Race Rock to display the



winning bodies of the top A-Main drivers. Next year, a new set of bodies will replace the 2001 winners. Pretty cool! Race Rock also played host to the Snowbirds wrap party and trophy presentation, and all who attended had a great time—and then promptly went back to the Ramada and crashed for the night!

Looks like Pepe Lemieux just obliterated the kid on the right. Hey, he is a pro driver, y'know.



Trinity's Fernando Gordinho, winner of the "best side-burns" award, gets some virtual seat time on a Harley.

matched but not beaten. Tony Fox had a bad start that put his ADX car into eighth when it rolled over the loop for lap one, but he showed his skill by systematically reeling in every driver between him and second place. Getting around SMC's Danny Sullivan was the toughest challenge, but once Tony passed him, Danny faded to sixth. Monti Pazica qualified eighth but spent most of the race in fourth, until it really counted, and then he moved his ProMatch-powered RaceTech into third for a podium finish.

1/12 STOCK

● HANDOUT MOTOR ● 4-CELL ● 5-MINUTE HEATS ● 5-MINUTE MAIN

Bruce Triplette and Mike Bean settled their Hyperdrive cars into first and second within the opening 30 seconds of the Main. The real mover in the field was third-place driver Brian Flowers, who churned out perfect lap after perfect lap to move his RaceTech Slider steadily through the field from seventh to third. Brian actually had a faster average lap time than second-place Mike Bean!

1/12 MOD

● OPEN MOD ● 4-CELL ● 5-MINUTE HEATS ● 5-MINUTE MAIN

Josh Cyrul, Act 3. Proving that qualifying is one thing and winning the Main is another, Josh owned 12-Mod on the oval even though he qualified "only" in fourth. Josh bobbled only once in 5 minutes and 67 laps, but that allowed Mike Murphy to oh-so-briefly put his Hyperdrive car into the lead at lap 52. By the time the loop counted off lap 53, Josh's SwitchBlade 12 SS was back in command. Phil Marabella moved his SwitchBlade 12 SS from six to five to four with steady driving, and the little cars put on

a great show. With this win, Josh Cyrul took three of the four Snowbirds Mod classes, and talk of a Cyrul sweep was in the air.

BOLINK SPRINT LEGENDS

● LEGENDS SPEC MOTOR AND 4-CELL BATTERY ● 4-MINUTE HEATS ● 4-MINUTE MAIN

Rule. Kimbrough. The race of the century. Not really, but it's fun to say. Mike Bean and his legal Legends racer took the official win with 37 laps, and Steve Rule white-knuckled his winged Bolink sprinter across the line just 1½ seconds behind. Sadly, arch nemesis Jay Kimbrough never challenged Steve; that would have *really* been disappointing if it had been a pay-per-view event.

1/10 PRO MODIFIED

● OPEN MOD ● 4-CELL ● 4-MINUTE HEATS ● 4-MINUTE MAIN

This was it: the final Main of the Snowbirds and a make-or-break race for Josh; with wins in 1/12 GTP Mod, Touring Mod and 1/12 Mod, he already had three of the four Snowbirds Nats titles in the bag. The pressure was on for a sweep, but Josh would not have it easy. He qualified second to Daryl Silva, Associated's oval hotshoe and half of the twin-brother team of Dwayne and Daryl Silva. (Daryl is the one with the goatee.) Josh and Daryl, who pitted across from each other all weekend, agreed to motor away from the rest of the field to find clear track and then open up for a head-to-head race. As the crowds pressed against the sides of the track, Daryl's L30 and Josh's SwitchBlade 2 tore around and opened a commanding lead with Daryl in first. Both clicked off 4.2-second fastest laps and bounced up and down a tenth here and there, but Josh just could not get around Daryl. When Josh made a mistake, it was all but over, yet somehow, Josh was able to get back on the L30's bumper. But it wasn't meant to be, and Josh followed Daryl across the line with 54 laps in 4:02.13 to Daryl's 54 in 4:01.90. That ¼-second gap might as well have been a mile



The great roll-off

Josh Cyrul and Daryl Silva were hanging out after the final Main wrapped up, just bench racing and comparing cars. But racers always find a way to make things "interesting," and the two soon began to roll their pinion-gearless cars to see who had the smoothest bearings. Barry Baker wasn't satisfied with the "shove method" of propelling the cars, so he rigged up a ramp for a true, equal test. Daryl's L30 out-rolled Josh's SwitchBlade 2 every time by a suspiciously wide margin. Then Barry noticed Daryl still had a pack strapped in his chassis, while Josh's battery slots were empty! It's all about inertia, baby.



DARYL



JOSH

to Josh, for whom only first place would do. Congratulations to Daryl Silva on an amazing victory, and a "You the man" for Josh; three out of four national titles is far from bad.

THE BIG FINISH

What happens when oval racers, on-road guys and touring cars get together in the same room?—a lot of good racing, that's what. The Snowbirds had it all: a Florida venue with plenty to do if you had downtime between races, pit-from-your-hotel-room convenience, a fantastic race staff and a genuine bunch of nice guys running the show, incredible driving talent on the stand and great camaraderie and fun (this permeated every practice lap, heat and Main in all classes). There was talk of Mike Boylan putting together a traveling RC carpet series that would put Snowbirds-style action on tour, and I would love to see this happen. Whether it's on the road or once a year in Florida, I'm looking forward to getting back to the Snowbirds. But I'll be racing next time; I was at the track way too long not to be driving!



Taxicab confessions ...

admit it: I forgot how exciting oval racing can be. As much as I enjoyed the on-road classes and touring cars (or "taxicabs," as some of the oval guys called them), which were dramatic shows of fast, precise driving and corner contact, the oval classes got me most pumped to race. As the cars circled the big ring, you could almost see every 1/10 second that each driver lost or gained as the gaps lengthened and shortened while the counter ticked down relentlessly. In the on-road classes, a little time lost because of a mistake was diluted by the endless tight turns; on the oval, one error could instantly cost you everything, even if your lead seemed insurmountable; the difference between first and last was a blink. The three-ring-circus concept of running oval, touring and on-road all in one Nats made the most exciting race weekend I've ever experienced, but to me, the oval cars were the stars of the show.

WINNERS

7TH ANNUAL SNOWBIRD NATIONALS

OVAL

1/10 4-CELL STOCK

FIN.	Q.A.L.	DRIVER.	CHASSIS	MOTOR	BATTERY	ESC	RADIO	TIRES	BODY
1	4	Eric Anderson	Hyperdrive	Handout	SMC 2400	Novak Cyclone	Futaba 3PJS	BSR	Protoform Pontiac HD
2	6	Bill Auchterlonie	RaceTech	Handout	SMC	GM V12	KO Mars	Jaco	Protoform Intrepid
3	7	Sonny Brown	RaceTech	Handout	SMC	Novak	Futaba 3PJS	Jaco	Bolink Pontiac

1/10 6-CELL STOCK

1	2	Michael Valentine	Associated	Handout	Sureshot	GM V12	Futaba	Jaco	Protoform
2	5	Kevin Koback	Hyperdrive	Handout	Pole Position	Tekin G9	Futaba	BSR	Protoform Intrepid
3	4	Danny Bartholomew	Woods X-15	Handout	Pro-Match	Novak Cyclone	Futaba	BSR	Protoform Taurus

1/10 4-CELL SPORTSMAN MOD

1	5	Brian Burkhart	Associated	Chameleon	SMC	LRP	Airtronics M8	Jaco	Protoform Pontiac HD
2	4	Tony Fox	ADX	Chameleon	SMC	LRP SR	Futaba 3PJ	Jaco	Protoform Intrepid
3	8	Monti Panzica	RaceTech	Chameleon	Pro Match	Novak	Futaba	Jaco	Bolink Pontiac

1/10 4-CELL PRO MOD

1	2	Daryl Silva	Associated	Reedy Ti	Reedy	LRP V7.1	JR R1	Jaco	Protoform Pontiac HD
2	1	Josh Cyrul	Trinity SB2	Trinity D4	Trinity SMH	Novak Cyclone	KO Mars	TRC	Protoform Grand Prix
3	3	Brian Burkhart	Associated	Putnam Pro	SMC	LRP	Airtronics	Jaco	Protoform Pontiac

1/12 STOCK

1	3	Bruce Triplett	Hyperdrive	Handout	Hot Shot	Novak	Futaba	BSR	Protoform Taurus
2	7	Mike Bean	Hyperdrive	Handout	TC	Novak	INS	BSR	Bolink
3	4	Brian Flowers	RaceTech	Handout	Pro-Match	Novak	Futaba	INS*	Bolink Pontiac

1/12 MOD

1	4	Josh Cyrul	Trinity SB12	Trinity D4	Trinity	Novak Cyclone	KO	TRC	INS
2	1	Mike Murphy	Hyperdrive	Putnam Pro	SMC	GM V12	Futaba	Jaco	Protoform Taurus
3	5	Phil Marabella	Trinity SB12	Trinity D4	Trinity NIMH	Novak Atom	Futaba	TRC	Protoform Taurus

SPRINT LEGENDS

1	3	Mike Bean	Bolink	Legends	Legends	Tekin	Hitec	Spec	Bolink Sprinter
2	8	Steve Rule	Bolink	Legends	Legends	INS	INS	Spec	Bolink Sprinter
3	6	Robert Schoeneman	Bolink	Legends	Legends	Novak	Futaba	Spec	Bolink Sprinter

ON-ROAD

TOURING STOCK

1	8	Michael "Toastie" Toth	Yokomo	Handout	Trinity SMH	Novak Cyclone	Airtronics M8	Yokomo	Hardbodies Stratus
2	1	Alex "Elian" Lopez	Schumacher	Handout	SMC 2400	LRP V7.1	Airtronics M8	Pit Shimuzu	Protoform
3	2	Mark Frechette	Schumacher	Handout	SMC	Novak	KO Propo	Pit Shimuzu	Protoform Stratus

TOURING SPORTSMAN MOD

1	1	Barry Baker	Yokomo	Chameleon	Trinity	INS	INS	Yokomo	Andy's Stratus
2	3	Joe Bandera	INS	Chameleon	INS	INS	INS	INS	INS
3	4	Toastie Toth	Yokomo	Chameleon	Atomic 2400	Novak Cyclone	Airtronics M8	Yokomo	Hot Bodies Stratus

TOURING PRO MOD

1	1	Josh Cyrul	Yokomo CK2	Trinity D4	Trinity SMH	Novak Cyclone	KO Mars	TRC	Protoform Stratus
2	4	Barry Baker	Yokomo CK2	Trinity D4	Trinity SMH	Novak Cyclone	INS	INS	Protoform Stratus
3	2	Paul Lemieux	Schumacher	Fantom	SMC	Novak Cyclone	Airtronics M8	Jaco	Protoform Vauxhauil

1/10 PAN GTP STOCK

1	1	Eric Hanna	Trinity SB	Handout	Integy	Novak	JR R-1	TRC	Protoform P-35
2	3	Dennis Cubbage	INS	Handout	INS	INS	INS	INS	INS
3	2	John Malin	INS	Handout	INS	INS	INS	INS	INS

1/12 GTP MOD

1	1	Josh Cyrul	Trinity SB12	Trinity D4	Trinity SMH	GM V12	KO Mars	TRC	Protoform Nissan P35
2	3	Fernando Gordinho	Trinity SB12	Trinity D4	Trinity SMH	GM V12	Airtronics M8	TRC	Protoform Nissan P35
3	4	Paul Lemieux	INS	Fantom	SMC	Novak Cyclone	Airtronics M8	Jaco	Protoform Nissan P35

1/12 GTP STOCK

1	3	Brian Shumate	Associated	Handout	Orion	Novak	Airtronics M8	Jaco	Protoform Nissan P35
2	5	Danny Charles	Trinity SB12	Handout	TC Power	Novak	Airtronics M8	BSR	Protoform Nissan P35
3	7	John Genord	Associated	Handout	Powers 3K	LRP V7.1	Futaba 3PJS	Jaco	Protoform Nissan P35

LEGENDS ON-ROAD

1	1	Chad Desmarais	Bolink	Legends	Legends	Novak Cyclone	Airtronics M8	Spec	Legends
2	5	Darrell Taylor	Bolink	Legends	Legends	Novak Cyclone	Airtronics M8	Spec	Legends
3	2	Steve Rule	Bolink	Legends	Legends	INS	INS	Spec	Legends

*Information not supplied ■



TAMIYA Avante

by Derek Buono

The year was 1988, and the hottest car on the market was the Tamiya Avante. Four-wheel-drive off-road was booming, and Tamiya introduced its technological masterpiece with the hope that it would take the world by storm. For many, the Avante was the ultimate car—the pinnacle of RC tech when buggies reigned supreme.

Now, 13 years after the original Avante was reviewed in the September 1988 issue of *Radio Control Car Action*, we look back at a car that was ahead of its time. JP's Hobbies and Raceway in Ansonia, CT, has a pristine Avante on display, and they let me borrow it for a flashback to the year when "ALF" ruled television, you saw "Beetlejuice" at the movies (and paid \$4 to get in), and Bobby McFerrin reminded us to "Don't Worry, Be Happy."

SHAFT-DRIVE 4WD

Chain-drive was still popular for four-wheelers back in '88, but the Avante used an advanced shaft-drive system with the motor mounted parallel to the drive train. The front and rear gearboxes are equipped with sealed gear diffs, and the spur gear features a ball differential; this makes the Avante a triple-diff car. The front and rear gearboxes are fairly elaborate and use a combination of straight-cut and beveled gears.

Shooting the Avante really took us back in time, and we found ourselves getting nostalgic for the good old days—even though RC stuff is a lot better now! It's nice to look back, but don't get stuck in a time warp. You know you're stuck in 1988 when ...

- Your "digital" charger has a 15-minute timer.
- You just over-charged your SCE pack.
- The only "TC" you know about is the guy who flew the helicopter on "Magnum PI."

- You put belt drive on your RC10 ...
- ... after you dialed in the A&L trailing arms.

Got any more flashback fodder? Log onto rccaraction.com, and share it with the rest of us old folks.

HI-CAP DAMPERS

The Avante's aluminum-body, double-O-ring shocks are as smooth as any modern units and are precisely machined. There's nothing dated about them at all!

QUICK-RELEASE WHEELS

The Avante's hubcaps are actually integral mounting nuts. Pop-up tabs are used to unscrew the hubcap and remove the wheel. When the tabs are flipped down, they fit into the rim to prevent the hubcap from backing out.

THROW-BACK ELECTRONICS

This is Avante sports gear straight from '88. Check out the pager-size receiver and extra-long antenna—nice. The Futaba ESC and the Trinity Monster Horse Power motor are classics.

FIBERGLASS CHASSIS

The arrowhead-shaped top deck looks pretty, but the main chassis is little more than a straight slab of fiberglass. The rear transmission sits on top of the lower deck, but the front tranny is actually a structural chassis component that is cantilevered off the front of the lower deck. The Avante accepted 6- or 7-cell packs and held the battery very close to the main chassis' centerline. A plastic retainer held in place by a body clip kept the pack in place.

PHOTOS BY WALTER SIDAS

MULTI-LINK SUSPENSION

What looks like a big mess is actually a 3-link suspension that had just as much adjustability in the front as in the rear; camber and toe-in were infinitely adjustable via thick aluminum turnbuckles. Note the spidery, cast steering hubs, universal-joint axles and the tiny pivoting castings that are joined by a urethane bushing. The pivoting castings allowed the front suspension to flex back in a crash rather than bend or break. The laydown shock position did not require a shock tower; instead, short standoffs held the shocks and, like the rear shocks, were braced by a threaded rod.

TRIPLE-BELLCRANK STEERING

The Avante's unconventional steering-servo placement called for an equally unconventional linkage. It worked; the extra bellcrank eliminated the need for an extra-long wire link at the servo, and the rigid aluminum bracket operated the primary bellcranks smoothly with equal throw in both directions.

ROBOTECH BODY

The Avante's body is a good example of Japanese "sci-fi deco" at its best. The curvaceous shell looks ready to go into hyperspace with its dual "intakes" and uncaged bubble cockpit. A separate undertray is clipped beneath the chassis. Removing both pieces was a hassle; three clips hold the undertray, and the main body could be peeled off only after two body clips and both suspension braces were popped off.



Tamiya cars were (and are) notable for their high-quality molding, detailed manuals and great box art, but the vintage machines had a little something extra that made them uniquely Tamiya: wacky wing slogans. Here are some of the classics; they probably seemed like a good idea in Japanese, but it's all in the translation

AVANTE—Being Nuts is Neat!
HORNET—Anytime Baby!
VANQUISH—Up and Away!
GRASSHOPPER 2—I'm Hopping Mad!
STRIKER—Get Rough!
FALCON—Born to be Wild!
FROG—No Guts, No Glory
EGRESS—Way Out Running
SUPER CHAMP—Go for It!
MAD CAP—Never Give Up
TERRA SCORCHER—Flying High
ASTUTE—Awesome!

BACK TO THE FUTURE

Tamiya re-released the Wild Willy and XR-311, and the Bruiser came back briefly as the Mountaineer. Is there any hope for an Avante comeback? Chances are slim; none of its parts still exist as components of current Tamiya vehicles, and it would be very expensive to bring back all those molded and cast parts. If you want an Avante, check out eBay. But if you would settle for a Manta Ray—the historic 4WD tub-chassis buggy that gave life to the TA01 touring car and the entire touring car boom—you're in luck; Tamiya plans to re-release the Manta Ray as an Expert Built ready-to-run! ■

"CHOCOLATE-CHIP" SPIKED TIRES

Back in 1988, soft-compound tires did not exist; hard, plasticky tires and spiky knobs ruled the day. The Avante wore spikes that were shaped like chocolate chips and hooked up fairly well on loose surfaces.

13

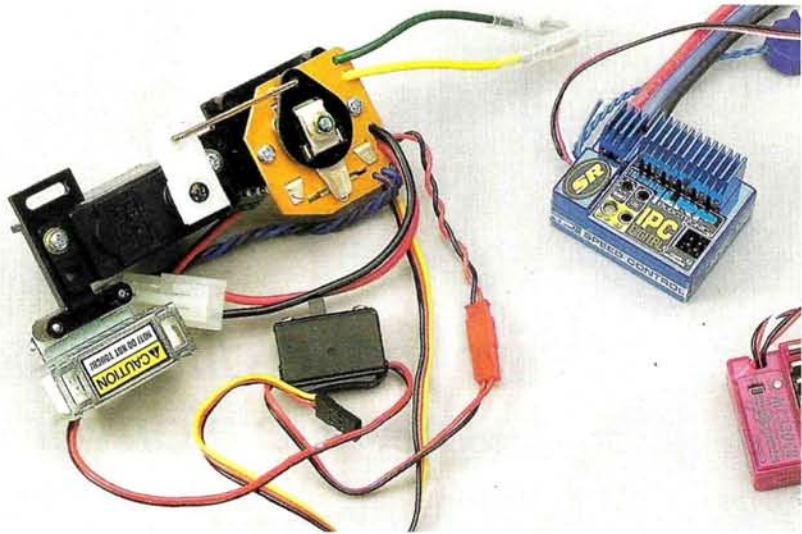
years later, being nuts is still neat

Install an ESC

Isn't it time you made this critical upgrade?

by Hank Riley

Along with ball bearings and a modified motor, an electronic speed control (ESC) is considered a must-have upgrade for an electric vehicle. An ESC is more efficient and reliable than a mechanical speed control (MSC), and it gives much better throttle control than the "steps" of a mechanical unit. Depending on your kit, your only option may be an ESC; some kits don't include—and can't accept—a mechanical unit. Installing an ESC can be super-simple or mildly challenging, depending on your experience and which unit you're installing, but it's never difficult. Here's how to do it.

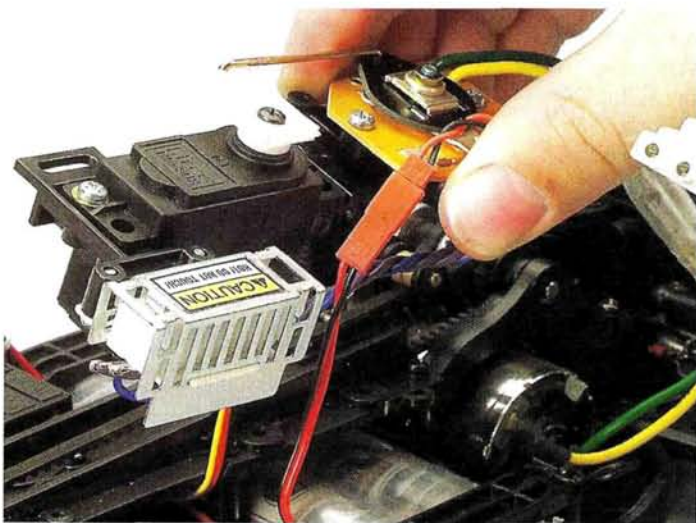


The mechanical speed control on the left is actually one of the cleaner assemblies out there, but it's still a cobbly-looking mess compared with the LRP and Futaba ESCs on the right.

NOTE: this article covers general ESC installation procedure but is not a replacement for your ESC's manual! Always follow the ESC manufacturer's instructions for correct installation and use.

Step 1: out with the old.

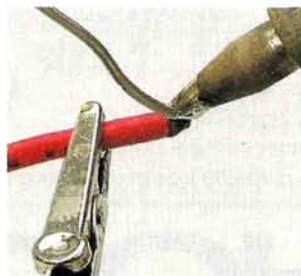
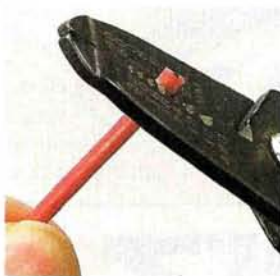
If you're not replacing an MSC, skip to step 2. Remove the MSC, the throttle servo and switch harness. In some cases, you may need to grind down molded-in mounting nubs left over from the MSC.



This TA04's mechanical unit can be removed as a complete unit with servo, but kits differ.

Step 3: tin the wires.

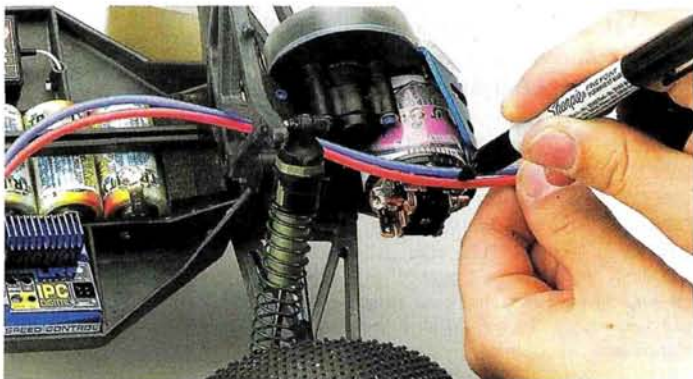
Strip about ¼ inch of insulation from each of the wires, apply flux and "tin" the wire by coating it with solder. Use just enough to coat the exposed wire; any more will wick below the insulation and make the wire inflexible.



Use good-quality strippers, and tin the wires carefully; don't saturate the wire with solder or it won't be flexible.

Step 2: test-fit the ESC.

Unless you have a Novak ESC with replaceable wires, this is one step you don't want to skip. Place the ESC on the chassis where you plan to mount it and route the wires to the motor and battery, being mindful of proper polarity as shown in the manual. Drape the wires so they follow the shortest path to the motor and battery but are not so short that they are taut; you want a little slack so a crash won't cause a solder joint to break. When you're satisfied with the way the wires "drape," mark the cut lines, then remove the ESC and snip the wires.



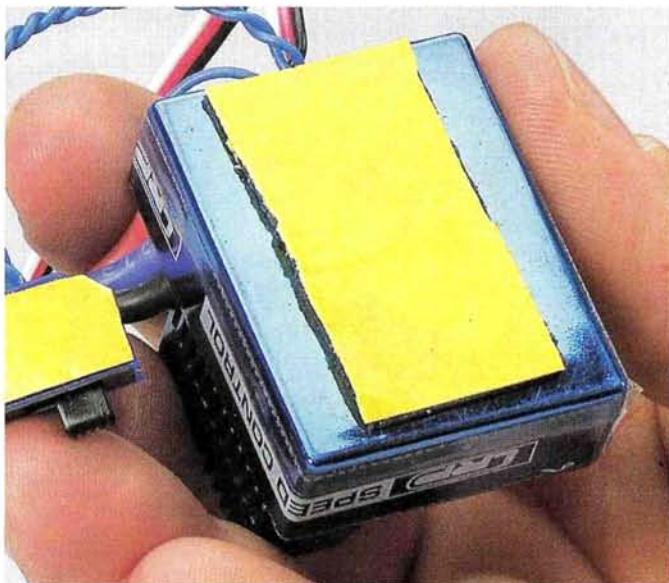
Double-check for correct polarity before you mark and trim the wires.

Step 4: install connectors.

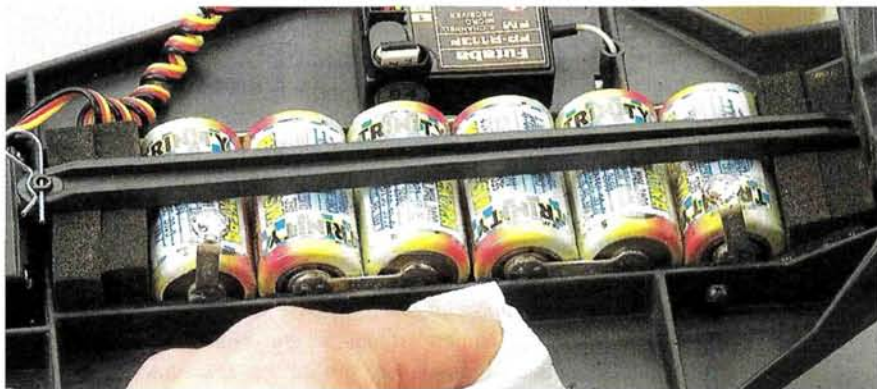
If you use battery connectors, install them now, according to the manufacturer's instructions. Three-wire ESCs like the LRP SR pictured in this article will require a jumper lead to be attached to the positive wire; we'll get to that later.

Step 5: tape the ESC into the chassis.

Clean the chassis and the underside of the ESC with denatured alcohol or plastic-safe parts cleaner, then use double-sided tape to attach the ESC to the chassis. Cut a small piece of tape to stick the switch to the chassis or to the side of the ESC (look in the ESC box; most include mounting tape).

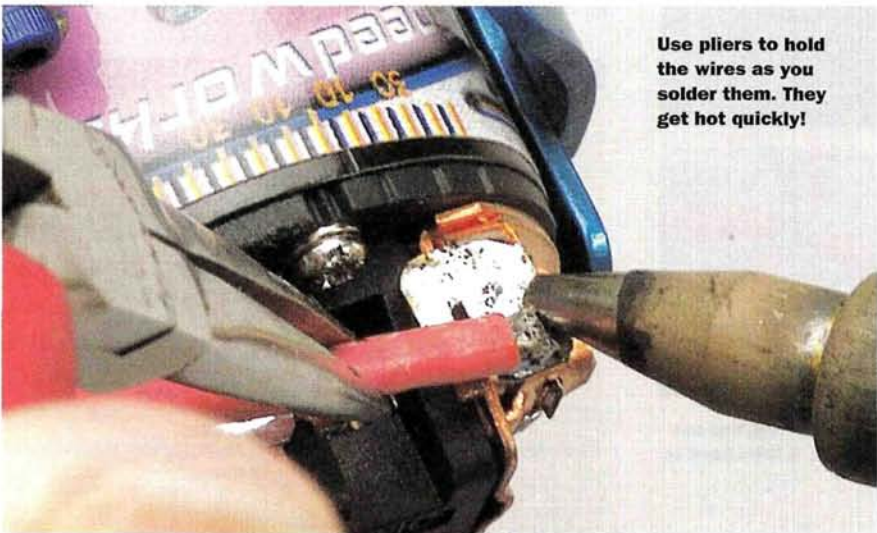


Prepare the chassis with a plastic-safe cleaner so the ESC will stay stuck, and don't skimp on the servo tape.



Step 6: solder the wires to the motor and battery.

Make sure the ESC is switched off. First solder the motor wires and then the battery wires. Attach the negative wire first and then the positive wire.



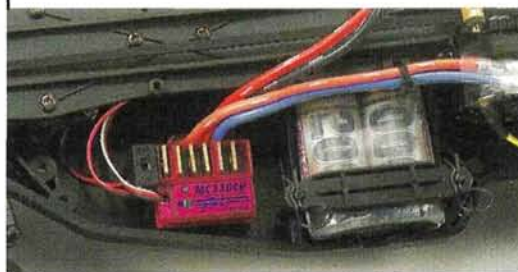
Use pliers to hold the wires as you solder them. They get hot quickly!

Plug-and-play

Most sport-type speed controls and even some higher-end models are equipped with bullet connectors and Tamiya battery plugs—just like those found on mechanical speed controls. If you're swapping your MSC for an ESC with these connectors, the job couldn't be easier.

STEP 1. Remove the MSC, throttle servo and switch harness.

STEP 2. Plug the ESC's bullet connectors into the motor connectors: red to positive and blue to negative. If the motor wires aren't red and black, and the motor can isn't labeled "+" or "-", double-check your car's instruction manual to confirm which is positive and which is negative. Plug the ESC's input harness into the receiver, in the channel-2 slot. Make sure the wires are oriented properly in the plug; if you have a pre-Z-connector Airtronics system, it's likely you will need to rewire the receiver plug; consult the ESC manual.



Installing an ESC with factory battery and motor connectors takes only a few minutes and instantly neatens your car. Use zip-ties to keep the wires away from moving parts.

STEP 3. Use double-sided tape to stick the ESC to the chassis. Look in the ESC box; most manufacturers include a piece of tape. Use another piece to hold the switch in place on the chassis or on the side of the ESC.

STEP 4. Use zip-ties to neatly secure the wires, and make certain they are kept away from gears, belts and tires.

Follow the manufacturer's instructions for setup, and your ESC installation will be complete.

Motor Prep

All ESCs require the motor to be fitted with capacitors. If you have one of the latest Trinity motors with surface-mounted capacitors, you can skip installing the three 0.1-microfarad capacitors that are included with most ESCs (the latest Orion motors have two surface-mount caps, but most ESCs will require you to solder on a third). If your ESC calls for a tantalum capacitor or a Schottky diode, or your motor doesn't include surface-mounted capacitors, you'll have to do some soldering. Here's what to do:

Capacitors. Pass the capacitor's leads through the holes in the solder tabs. Apply solder to the tabs, then trim off the excess lead. For stock motors without the center tab, file a spot on the can and solder the leads directly to it. Most ESCs call for two capacitors to be installed from the tabs to the center tab/can, and one to be installed across the positive and negative tabs.

Schottky diodes. The diode is polarized, so be careful not to install it backward; the side with the stripe is positive. Use one of the diode's leads as a handle while you solder the other lead. Attach the diode so its "body" is between the solder tabs. Solder the remaining lead and then trim off the excess.



(Above) These capacitors are ready for solder. (Left) Schottky diodes are polarized; the stripe belongs on the positive side (note the "plus" molded into the motor's endbell).



STEP 7: add a jumper wire.

If you're installing a 3-wire ESC, such as the LRP SR shown here, you'll need to connect the red (positive) wire to both the battery pack and the motor. There are two ways to do this; you can strip a section of wire and solder the positive battery lug "in line," or you can add a jumper wire. It takes a little more time to add a jumper wire, but you'll have greater flexibility when positioning your pack if your car or truck allows you the option of moving it (as the Associated T3 in the photos does). If your pack will always be in exactly the same spot, the in-line method may be better for you.

If you plan to hook up your 3-wire ESC and battery with plugs, you'll definitely need to solder a jumper wire onto the positive lead to accommodate the connector.



Gently roll a hobby knife across the wire to define the ends of the gap ...



... then slice across and peel off the insulation.



Tin the exposed wire, and solder the jumper. A third hand is a big help.

STEP 8: plug in the ESC.

Insert the ESC's input harness into the channel-2 slot in the receiver. Make sure the wires are oriented properly in the plug; if you have an older Airtronics system, you may need to rewire the receiver plug; consult the ESC manual. Carefully bundle the wire so it does not interfere with belts, gears, steering bellcranks, or other parts.

Now you're ready to set your ESC. Make sure the pack is charged (and plugged into the ESC, if you use plugs), and place the car on a block so the wheels are suspended. Familiarize yourself with the setting procedure given in the manual; some push-button setup systems require you to press the setting button within a specific time, and this makes it difficult to complete the setup if you're reading along in the manual as you do it. Switch your radio on first and then the ESC. Follow the manufacturer's setting instructions, test the throttle while the car is on the block and then go out and try your new ESC! ■

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Maxx Power for your dual-motor Monster Truck

I've seen it many times: dual-motor monster trucks with modified motors that are too much for the ESC to handle wired to a battery with at least one too many cells. Everything is simply overworked and on the verge of blowing up. To avoid this scenario, Traxxas equips the 12-cell, dual-550-motor E-Maxx with the Vx12 ESC, which is designed just for that type of heavy use. The Vx12 is standard equipment in the big E, but it can also be bought separately and installed in other dual-motor trucks. This month, I'm installing the system—complete with 550 motors—in a modified Clod Buster. Let's get started.

MOUNT THE ESC

The Vx12 has two mounting tabs that allow you to fasten it to the chassis with screws, but to avoid having to drill holes in the chassis for the mounts, I simply stuck the ESC down with servo tape (after making sure the motor and battery wires were long enough to reach their destinations). Wiring the motors is simple: because parallel circuitry is built in to the ESC, you have only to hook up the red wires to the positive motor tabs and the black wires to the negative tabs. You can use the existing motor plugs or solder the wires directly to the motor; the choice is yours.

The Vx12 ESC looks right at home in my modified Clod Buster. The original switch had exposed contacts, so I replaced it with the switch shown here.



INSTALL THE MOTORS

The Vx12 ESC is designed to handle 550 motors, but 540 motors can also be used. The 550 motor will have more torque but less rpm than comparable motors. The only physical difference between the 540 and 550 that affects installation is the length of the can: a 550 motor is about 1/4 inch longer than

a 540 motor. Mod Clods, the Kyosho USA-1 and the Tamiya Juggernaut can accept the 550s, but a stock Clod leaves too little clearance for my taste.

MAKE ROOM FOR BATTERIES

The Vx12 is built to handle 12 cells.



The only physical difference between the Trinity 550 motor and a 540 motor is the can length. The swaybar for my truck interfered with the motor, so I attached it to the upper link with a heavy-duty zip-tie.

You could use a lower voltage, but who would want to? You can use side-by-side or stick packs. I prefer the stick packs because they're more convenient and less likely to short out in my metal-chassis Clod.

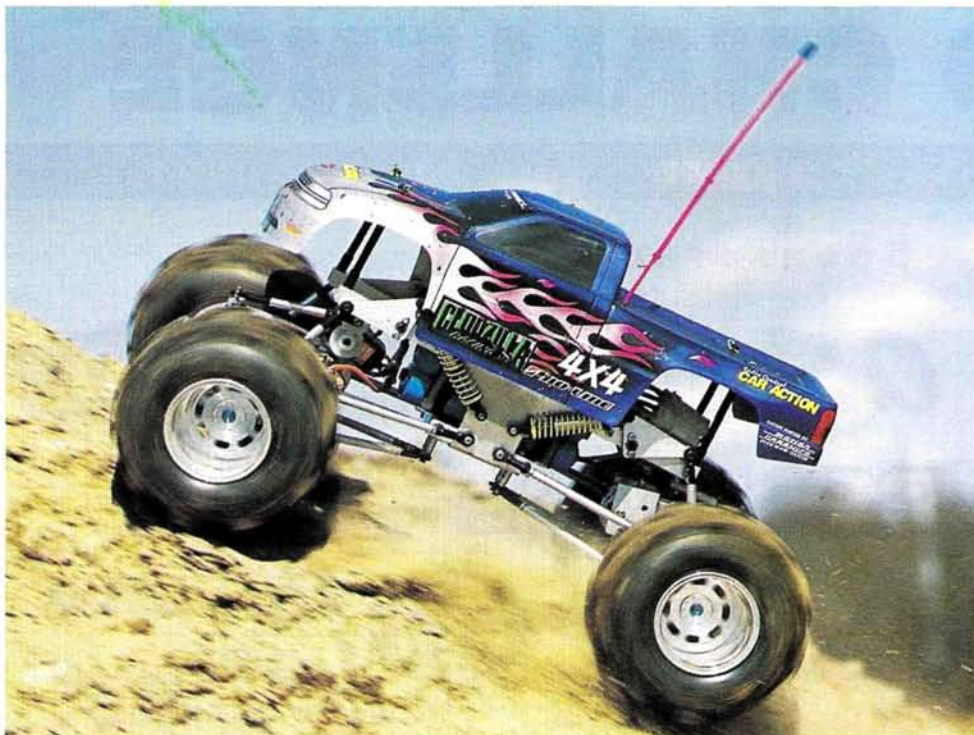
Like most aftermarket monster truck chassis, my ESP chassis uses heavy-duty zip-ties to hold the batteries in place. I stack the packs on top of one another with the plugs facing in the same direction, and I place a small strip of double-sided tape between them to prevent them from sliding against one another. I also wrap electrical tape around each end of the stack to lock the packs together. If you use a side-by-side pack, wrap it in a heat-shrink sleeve to prevent the cells from shorting out against any metal on your chassis (you could also wrap the pack in electrical tape—always a great look).

SUSPENSION TWEAKS

Because you now have the weight of an extra 6-cell battery in your truck, the suspension has to be dialed in. At the very least, you should increase the preload on the existing springs to maintain the proper ride height, but you'll get better performance with a new setup. As a general rule, if you increase your truck's sprung weight, you will have to increase the shock damping and go to a stiffer spring. Try



The Traxxas ESC requires 2, 6-cell packs for power. The cells are held together with double-sided tape; electrical tape adds security.



replacing the shock fluid with fluid that is 10WT "heavier" (for example, replace 30WT with 40WT), and go to the next stiffer spring offered by the manufacturer of the springs you use.

IS IT MORE FUN?

After I finished installing the electronics, I couldn't wait to hit the dirt. I have put quite a bit of time behind the wheel of the Traxxas E-Maxx, and I know what explosive power it has when you mash the throttle. I plugged in the batteries, put the truck on the ground and let it rip. I expected a crazy wheelie and dirt flying everywhere, but the truck

launched as it had when powered by two 17-turn 540 motors and one battery pack. It did, however, reach a higher top speed than before.

This ESC doesn't have braking, so slowing the big truck down takes some getting used to. I was very happy with the ESC's performance; the throttle felt very smooth. I took the truck over to a huge dirt pile and drove up it. The truck was definitely more aggressive with the torquey 550 motors. I don't think that these motors will give your truck an advantage in a straight-line drag race, but you sure will have a lot more fun with it in the backyard.

Before you attempt to convert your truck in this way, consider that the extra torque of the 550 motors and the need to use reverse for braking can be very tough on drivetrain parts, so be careful. This conversion will work on any dual-motor monster truck as long as there is room for the motors, and it's definitely worth doing if your performance needs call for mounds of torque. ■



Kimbrough 32-pitch TRX precision gears

Kimbrough has expanded its gear line to include 32-pitch gears for Traxxas gas trucks. The gears are a direct replacement for the stock ones, and they're molded of tougher material than Kimbrough's electric-vehicle gears. Five tooth counts are offered for \$4 each: 64-tooth (part no. 364), 66-tooth (366), 68-tooth (368), 70-tooth (370) and 72-tooth (372).



SHOP TALK

I bought a Tamiya Clod Buster a few months ago. It's equipped with an ESP Clodzilla IV chassis, a Novak Super Rooster, two Trinity Sapphire motors and Futaba radio gear. I would like to run a Trinity 4400mAh Clod Buster battery pack. Which peak charger should I use for the 4400mAh pack? [email] Mike

Any popular peak charger will do the job, but charging will take a while; if a charger takes 35 minutes to charge a 2000mAh pack, it will take more than an hour to charge a 4400mAh pack. Some chargers have circuitry that shuts them down if a peak charge is not detected after a set time (usually about 45 minutes). If your charger has this feature, to get a full charge, you'll have to restart it after it has shut down.

If you have any problems or questions about trucks, or if there is something you would like to see in "4x4," email me at kevinh@airage.com or send your letters to: "4x4"

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Masking and more

No matter how carefully you apply paint or how skilled you are with an airbrush, poor masking will result in a poor paint job. To show the proper way to use the most common masking techniques, I'm going to throw every masking trick there is at this Traxxas Rustler body. You certainly don't have to use every technique shown here on your next body, but you can pick and choose the ones that will give you the look you want with the least effort.



Body prep

Good body preparation is a matter of keeping its inside clean so paint will stick to it, while protecting its outside so paint won't stick to it. First, thoroughly wash the inside of the body shell with soap and water; then dry it completely. Mold-release and fingerprints on the inside will prevent the masking from adhering properly; this can lead to paint bleeding beneath the masking lines or blotchy patterns in the sprayed areas. The more carefully you prepare the inside of the body, the better your painting results will be.

Wrap the outside of the body in plastic cling-wrap, and use a hair dryer to shrink it snugly. This protects the outside of the body without making it impossible to see how your paint scheme is progressing. If you have a Tamiya, HPI, or Kyosho body with factory-applied masking film, you can skip the plastic-wrap treatment. But be warned: due to the way some bodies are molded, the side of a rear wing that you want to paint may be covered with masking film, and the side you don't want to paint may be inside the shell, exposed to paint. In these situations, detach the wing from the body and paint it separately.



If the body didn't come with a protective overspray film, cover it with plastic cling-wrap, which you can then seal into place with a hair dryer.

Window mask

Many of the top manufacturers include high-quality vinyl masks for their windows, but I still see lots of poorly masked windows due to careless application of the masks. Stick the mask to the window's corner first, and then align the mask to the lower edge of the window. Stay true to the edge, and the mask will align itself. If it creeps off line just a little, it's better to trim the mask than to try to peel it



Align window masks with a corner and then along their straight edges; avoid applying its in one shot because if you have to remove it, you will stretch and distort the vinyl.

off and reapply it; the vinyl will stretch and distort if you remove it, and that will make it impossible to realign with the window panels when you stick it back down. If you have a window mask that's hard to align because it's in a tight spot (such as the rear window in a truck cab), you can fall back on the "wet method." Hose the adhesive side of the mask with window cleaner, apply the sticker and push out the bubbles so the edges remain sealed. You'll have to rewash the interior of the body to get rid of any residual cleaner that may discolor the paint.

Paper masking tape

The adage "You get what you pay for" is especially true of masking tape. Look for a name brand such as Scotch/3M and use it faithfully. Because high-quality tape is less porous, paint is less likely to wick into it. With paper-type masking, avoid using the edge of the tape as a masking line; it may look straight and sharp, but it has fuzzy edges that may allow paint to bleed underneath. To avoid this, trim the tape with a razor and a straightedge. (You can do this on the body, but it's easier to cut the tape on a cutting mat and then transfer it to the body.) The freshly cut edge creates a better seal and prevents paint from creeping beneath the tape.



Don't use the factory edges of the masking tape because they're ragged and will allow paint to wick and bleed underneath. The Excel twin-blade knife (right) quickly makes parallel tape sides.

After applying the tape, use your thumbnail or a credit card to burnish it down fully. If you look at the adhesive through the outside of the



body, it will appear to darken and "fill in" where it is depressed. This is the key to having a bleed-free paint job.

Add dimension to your stencil mask drops



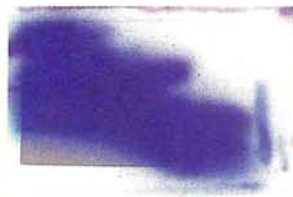
With the stencil graphic in place and its edges burnished down, apply thinned Charcoal to the leading and lower edges to make a shadow.



Then apply the fluorescent yellow main color and follow it with a backing coat of white. Remove the stencil, and then apply the reflective "glisten" mark. You can use an airbrush for this or simply dip a pencil point in white paint.



Next, give the edges of the "drop" a shot of purple; this darker color adds dimension to the "drops."



Simply fill in the rest of the design with the blue, and then let the paint dry.



Burnish edges, corners, creases and mold lines repeatedly to keep your paint jobs free of bleed-through.

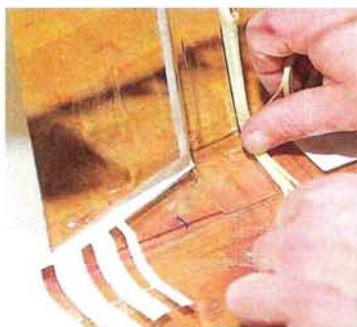
"negative" of the design and painting the "positive" areas first; the proper technique will depend on whether you have dark graphics on a light background or light graphics on a dark background.

Stencil masks

Parma and XXX Main offer paint stencils that can be used to create various designs and effects. Mark the general location on the exterior of the body and apply the stencil's vinyl pieces by lifting them off the backing using a no. 11 hobby blade. Once the shape is in place, burnish it down fully. Large multi-piece graphics require carrier tape. This is a low-tack tape used to maintain the alignment of the design's parts while you position the graphic. Once the graphic is in place, peel the carrier away leaving the design intact. After the main body color has been applied, carefully peel the stencil mask away working from the graphic's largest side. Paint the unmasked area as you desire. You can also work in reverse by applying the

Vinyl tape

The advantage of vinyl tape, such as Pactra's Fine Line Tape, is that it's much more flexible than conventional types of masking, so it conforms more easily to compound curves. Pactra's tape is available in 1/16-, 1/8-, 1/4- and 1/2-inch widths. The narrow, flexible tape can turn a far tighter radius than wider tapes, which opens more design possibilities. Also, since vinyl isn't porous, it won't allow paint to wick through and ruin your paintwork. As with conventional masking tape, you should look at the edges of the tape from the outside of the body. A well-sealed edge distinctly changes color when it's pressed down properly. Vinyl tape is more expensive than paper masking, but the finished results are worth it. One way to save money is to use the vinyl masking tape to create borders and design perimeters, then fill in the rest of the area with paper masking tape.

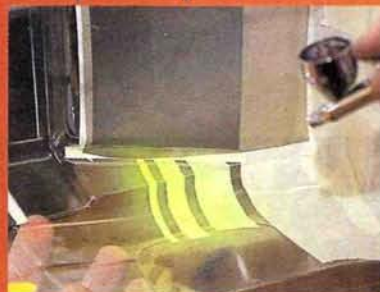


Liquid masking offers a quick way to fill in large areas.

Liquid mask

The basic application method is the same whether you use Parma, Hobbico's Master Mask, or Bob Dively liquid masking. The only real trick to using this goop is to put enough on the body to make it easy to peel off (two coats minimum). Make sure that the liquid masking is completely dry before you lift it off; you'll know it's dry when it turns clear and has only a slight tint to show where it is. Liquid mask is ideal for blocking out large areas of a body that may be tough to cover with tape and for complete interior coverage for very intricate designs. The masking flows into corners well, won't accidentally be pulled off from the sides and is virtually bleed-proof. If you're doing a partial area mask, create the boundaries with tape and spread the masking part of the way onto the tape to prevent bleeding where the tape and liquid masking meet.

Tape Tips



• Seal the tape

Applying the first coat of paint is a critical operation that can make or break your paint job—really! All you're after with that first coat is a mist of paint to seal the edges of your masking. If you glob the paint on too thickly, it will soak the tape and creep right through. Subsequent coats can be applied a little more thickly, but care should be used to avoid soaking the underlying layer.

• Residue? Resi-don't

Some cheaper tapes or rolls that have been sitting around for a while can leave an adhesive residue. If this happens to you, use a cotton swab dipped in denatured alcohol (isopropyl will work, too) to soften the adhesive, and gently try to work it free. And remember to get rid of that old tape—pronto.

• Bleed fix

No matter how much preparation and care you use, paints may still bleed. If you use water-based paint, use the same technique as you used to remove the adhesive residue. Ketone-based paints that etch the Lexan are more difficult to remove, since full-strength ketone thinner will eat the body. Try scraping the offending paint with a no. 11 hobby blade; if this still leaves an unsightly mark, dig into your decals. Many a boo-boo can be hidden using some well-placed stickers.



NEW IN THE SHOP

Pro-Line '50s Chevy Stepside

Imagine that you could take all of the classic styling elements from all of Chevrolet's '50s pickups and combine them in one truck. That's essentially what Pro-Line has done with its '50s Chevy Stepside. The truck has crisply molded body lines, and the polycarbonate is embossed for the T-Maxx fuel tank and engine. Even if you don't own a T-Maxx, this body would look at home on virtually any monster. Pro-Line includes a nice set of vinyl graphics—yes, including the cool flames!

■ Part no.—3106 ■ Price—\$22.



Troy Shear Jr., of Roscoe, IL, picked up the Tamiya Spray Works system after seeing the unit reviewed in the January '01 issue. This is his first project with the airbrush—a Protoform Chrysler 300 body that sits atop his HPI Nitro RS4. Troy used the airbrush to lay down the Faskolor Fasescent Blue and then followed up with Faskolor Silver. The two deep metallic colors complement each other nicely and give the touring car a distinctive look.



Do you have a sharp, uncluttered photo of your best paintwork? Send it in! Explain the types of paint, products and techniques you used to finish it. Be sure to include your full name and address and your email address if you're online. For information about sending electronic images, check out www.caraction.com. Send print or slide photographs to "Body Shop," RC Car Action, 100 East Ridge, Ridgefield, CT 06877, USA.

If you have questions or suggestions about painting techniques, or if there's something you'd like to see in "Body Shop," email me at bobh@airage.com, or send your letters and pictures to: "Body Shop," RC Car Action, 100 East Ridge, Ridgefield, CT, 06877-4606 USA.

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Futaba MC330CR Reversing ESC

Do you remember the Futaba MC210CB? Many hobbyists had it as their first ESC, often because it came with their Magnum or Magnum Junior radios. The black box was reliable, and it handily outperformed mechanical speed controls and shrugged off abuse with an automotive fuse that plugged into its case. I had a couple of them back in the day, and I thought they were great! But technology has long since marched on, and today's ESCs are lighter and smaller and have a smoother throttle feel, thanks to their high-frequency switching. They also have all sorts of other cool features to protect them against damage and increase their ability to be tailored to your driving style.

For a while, it looked as if Futaba would be left behind without a replacement for its dated MC210CB. Then came the MC330CR—a full-featured, high-frequency reversing ESC that looks like a match for anything in its price range. I tested one to see how it stacks up.

FEATURES

- **High-frequency operation.** The MC330CR switches at 1500Hz—35 times faster than the old 60Hz MC210CB. That makes for much more precise throttle feel, cooler operation and greater efficiency.
- **Reverse disable.** If you would like to race “officially” now and then, the MC’s reverse function can be locked out, leaving proportional brake (reverse isn’t allowed for racing).
- **Push-button setup.** No potentiometers here. Any ESC without this feature just isn’t in the game.
- **Low-voltage signal-priority circuitry.** When you run your car until the pack is so deeply dumped that the motor’s amp draw drains

away the voltage required to run the ESC and steering servo, this circuitry kicks in to make sure you remain in full control.

- **Current-overload and thermal-overload protection.** If your motor draws more amps than the MC can handle, it will shut down instead of going “poof.” Likewise, abuse that overheats it will cause it to shut down until cooler conditions prevail.



- **Power-on alarm.** If you switch off your transmitter but leave the MC330CR turned on, it will beep in protest. Don’t you know you’re supposed to turn the ESC off before the transmitter?
- **Tamiya battery connector and bullet plugs.** You can install aftermarket plugs and hard-wire the motor for greater efficiency if you like, but the stock plugs are the way to go if you’re replacing a mechanical speed control and prefer a quick, no-solder installation.

TESTING

I installed the Futaba MC330CR in the Tamiya Loctite Zexel GTR TAO4 I tested alongside the Ferrari 360 Modena featured in this issue. It took only a couple of minutes to get the job done, since the TAO4 already had bullet connectors on its included motor, and I used a pack with a Tamiya connector. The push-button setup procedure uses a “confirmation” system to set full throttle, neutral and the maximum brake/reverse positions. After holding the button to get into setup mode, you hold the trigger at each position and press the button to confirm them. The process took a couple of seconds, and the MC let me know all was well with a beep. At first, I thought I must have

inadvertently disabled reverse, since I had full brake control but no reverse operation. I quickly discovered that the MC uses a “double pump” system for reverse. The first application of up-trigger after throttle is all brake; no matter how long you hold the trigger, all you will get is brake. If you return the trigger to neutral and then reapply up-trigger, proportional reverse is activated. This system requires a very deliberate action to get into reverse; that spares the motor and transmission the abuse of accidental reverse engagement, but you can still row the trigger quickly for reverse stunt driving. Disabling reverse was simply a matter of holding the setup button while switching the unit on, and the MC reminds you of the setting by beeping once at switch-on if reverse is functional and beeping twice if reverse is disabled.

Fair enough; everything works. But how tough is it? After driving around long enough to confirm that yes, the 1500Hz frequency does provide smooth, precise throttle, and yes, the brakes are strong and reverse is fully proportional and as smooth as forward throttle, I let the abuse begin. I dead-shortened the motor leads, dumped the throttle, used a rubber band to hold the trigger clamped—and watched. The MC instantly heated the FETs and then shut down. As soon as the FETs had cooled enough for the MC to disengage the thermal shutdown, the rubber-banded radio kept the throttle pumping and gave the MC the dead-short treatment again. I allowed the vicious cycle to continue until it became obvious that the ESC simply wasn’t going to blow.

After letting it cool enough to restart once more, I went out for a drive, and the unit performed flawlessly. To test the 13-turn motor limit, I installed a machine-wound 13-double, and I dumped a couple of packs through the MC330CR with plenty of partial-throttle driving and forward/reverse abuse. The ESC got warmer than it did with stock motor power, but it never faltered. For a final test, I switched off the radio before the ESC, and sure enough, the MC beeped continuously to let me know it was still on.

THE VERDICT

I’m impressed! The MC330CR is a tough, tiny and well-featured ESC with clever innovations (I especially like the power-on alarm); it offers excellent performance at a very fair price (about \$80). For high-performance play and occasional racing, the Futaba MC330CR is a fine choice.

—Peter Vieira

MANUFACTURER'S SPECIFICATIONS

Input voltage.....	7.2 to 8.4 volts (6 or 7 cells)
Motor limit	13-turn
“On” resistance	0.0035 ohm
Frequency.....	1500Hz
Connectors	Futaba J/Tamiya battery/bullet motor
BEC voltage.....	6 volts
Wire size	14-gauge
Dimensions.....	1.07x0.5x1.3 in.

- | | | |
|-------------------------------------|---|---------------------------------------|
| AAA Model Supply/Dillon Racing 194 | Hudy Special Products 107 | Peak Performance 154 |
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| Ace Hobby Distributors 75 | JR 20-21 | Pro-Line C3, 6-9 |
| Action Hobbies 215 | JT Racing 207 | RCCarAction.com 174 |
| Airtronics 110 | Keyence 141 | RC Car Kings 195 |
| America's Hobby Center 163-165 | Kimbrough 106 | RD Logics 97 |
| Associated Electrics 58-61, 108-109 | King Distribution 86-87 | RC Nitro 99 |
| Boca Bearing 215 | Kondo Kagaku Co. Ltd 128 | RCStore.com 204-205 |
| Bolink 214-215 | Kyosho 85, 100-101, 127, 157, 181 | Racekeeper 214 |
| Bruckner Hobbies 172-173 | LF Sign & Hobbies 207 | Radtech Racing 215 |
| Competition Electronics 66 | LRP Electronic 135, 184 | Robins Racing 207 |
| Corally USA 47 | M.D. Planes 190-191 | Robinson Racing 62-65 |
| Deans 175 | M.I.P. 30-31 | Serpent 156 |
| Debbies RC World, Inc. 207 | Mach 1 Hobbies 214 | Sheldon's Hobbies 212-213 |
| Du-bro 217 | Megatech 121, 137, 153, 159, 177 | Stormer Hobbies 208-211 |
| Duratrax 27, 50, 67, 111, 162 | Model Rectifier Corp. 17 | SVM Racing Mfg. 158 |
| Dynamite 51 | Morgan Fuel 185 | Tamiya C2, 14-15, 42-43, 188 |
| Futaba Corp. of America 90, 98 | Mugen USA 24-25 | Team Losi 78-79, 183 |
| General Silicones 40-41, 49 | Nagengast 214 | Team Orion 189 |
| Genka Trading Corp. 88-89 | National R/C 178 | The Hobby Store 207 |
| Global Hobbies 179 | New Era Models 216 | RC Touring Car 132 |
| H.P.I. 28-29, 76-77 | Niftech 214 | Tower Hobbies 119, 140, 142-146 |
| Hammad Ghuman 32-33 | Novak Electronics 23 | Traxxas 52-53, 131, 176 |
| Hardcore Racing 186 | Ofna Racing 18-19, 44-45, 55, 57, 68-69 | Trinity C4, 3-5, 10-13, 34, 36-37, 91 |
| Hitec RCD 39, 171 | Omni Models 147 | Varad 216 |
| Hobbytek 214 | Painting & Detailing RC Bodies 129 | XXX Main Racing 185 |
| Hobby People 196-201 | Panther Tire 74 | Yokomo USA 120 |
| Horizon Hobby Inc. 166-167 | Parma Intl. 130 | |

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Chris's BACK LOT

The opinions expressed on this page do not necessarily represent the opinions of the entire *Car Action* staff. Any resemblance to reality is purely coincidental. Send your correspondence, hate mail, love letters, photographs—anything you like—to Chris's Back Lot, c/o *Radio Control Car Action*, 100 East Ridge, Ridgefield, CT 06877-4606. My email address is: chris@airage.com.

BY CHRIS CHIANELLI

Meet the van man

Frequent readers of "Back Lot" already know my feelings about sheep. Not the animals; I have nothing but respect for the creatures that are so willing (and dumb enough) to give up their wool so I can have an itchy sweater. I'm talking about people who are sheep—you know, followers. Conformists. Those who are too afraid to do their own thing and be true to themselves. I've said it before: life is too short to be a sheep.

So, I gotta give props to my man Skyler, who definitely does his own thing, whether it's with his full-size vans (check them out at www.wicked-evolution.com) or the—barely—smaller RC versions. Madness Machine Junior is a model of the full-size custom 4WD off-road Madness Machine Skyler built by hand and then totaled during an eventful off-road excursion (the website has the details). The "little" van is definitely an original, and so is Skyler. No matter what you say about his creation, you can't say you've seen anything like it before!



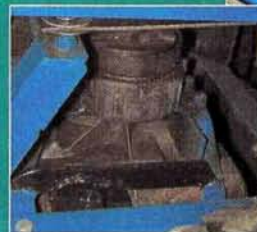
Briggs & Stratton power gets the 380-pound-plus Madness Machine moving. The Briggs powerplant is to be expected, since the van started as a riding mower! Even though it puts out only 3hp, Skyler says it can tow a trailer full of people and his full-size van, tops out at close to 30mph, and does wheelies—must be the 3:1 gear reduction.



This is the steering "servo"; it's actually a power-window motor and gearbox assembly from a full-size car.



It's tough to see, but that's a 3-speed Craftsman transaxle in there. Everything is controlled with Futaba radio gear.



The van's first chassis was wood grafted to the original riding mower platform, but Madness Machine Junior is now 100 percent steel. Note the onboard gas can!

